Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

2

1316 Issued December 19, 1910.

U. S. DEPARTMENT OF AGRICULTURE.

OFFICE OF EXPERIMENT STATIONS—BULLETIN 231.

A. C. TRUE, Director.

Agr.
15-827
15

COLLEGE EXTENSION IN AGRICULTURE.

DISCUSSIONS BEFORE THE GRADUATE SCHOOL OF AGRICULTURE, AT THE IOWA STATE COLLEGE, AMES, IOWA, JULY 4-27, 1910.

LIBRARY
RECEIVED
DEC 20 1910
U. S. Department of Agriculture

Edited by

JOHN HAMILTON,
Farmers' Institute Specialist, Office of Experiment Stations.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1910.

LIST OF PUBLICATIONS OF THE OFFICE OF EXPERIMENT STATIONS ON FARMERS' INSTITUTES.

BULLETINS.

Bulletin No. 79. Farmers' Institutes: History and Status in the United States and Canada. By L. H. Bailey. Pp. 34. 1900.

Bulletin No. 110. Proceedings of the Sixth Annual Meeting of the American Association of Farmers' Institute Workers, held at Buffalo, N. Y., September 18 and 19, 1901. Edited by A. C. True, D. J. Crosby, and G. C. Creelman. Pp. 55.

Bulletin No. 120. Proceedings of the Seventh Annual Meeting of the American Association of Farmers' Institute Workers, held at Washington, D. C., June 24–26, 1902. Edited by A. C. True and D. J. Crosby for the Office of Experiment Stations, and G. C. Creelman for the Association. Pp. 119.

Bulletin No. 135. (Revised.) Legislation Relating to Farmers' Institutes in the United States. By John Hamilton, Farmers' Institute Specialist. Pp. 35. 1905.

Bulletin No. 138. Proceedings of the Eighth Annual Meeting of the American Association of Farmers' Institute Workers, held at Toronto, Ontario, June 23–26, 1903. Edited by W. H. Beal for the Office of Experiment Stations, and G. C. Creelman for the Association. Pp. 119.

Bulletin No. 154. Proceedings of the Ninth Annual Meeting of the American Association of Farmers' Institute Workers, held at St. Louis, Mo., October 18–20, 1904. Edited by W. H. Beal and John Hamilton for the Office of Experiment Stations, and G. C. Creelman for the Association. Pp. 91.

Bulletin No. 155. Agricultural Instruction for Adults in the British Empire. By John Hamilton. Pp. 96. 1905.

Bulletin No. 163. Agricultural Instruction for Adults in Continental Countries. By John Hamilton. Pp. 32. 1905.

Bulletin No. 165. Proceedings of the Tenth Annual Meeting of the American Association of Farmers' Institute Workers, held at Washington, D. C., November 9–11, 1905. Edited by W. H. Beal and John Hamilton for the Office of Experiment Stations, and G. C. Creelman for the Association. Pp. 94.

Bulletin No. 166. Course in Cheese Making for Movable Schools of Agriculture. By L. L. Van Slyke. Pp. 63. 1906.

Bulletin No. 174. History of Farmers' Institutes in the United States. By John Hamilton. Pp. 96. 1906.

Bulletin No. 178. Course in Fruit Growing for Movable Schools of Agriculture. By Samuel B. Green. Pp. 100. 1907.

Bulletin No. 182. Proceedings of the Eleventh Annual Meeting of the American Association of Farmers' Institute Workers, held at Baton Rouge, La., November 12–14, 1906. Edited by W. H. Beal for the Office of Experiment Stations, and John Hamilton for the Association. Pp. 90. 1907.

Bulletin No. 199. Proceedings of the Twelfth Annual Meeting of the American Association of Farmers' Institute Workers, held at Washington, D. C., October 23 and 24, 1907. Edited by W. H. Beal for the Office of Experiment Stations, and John Hamilton for the Association. Pp. 79.

Bulletin No. 200. Course in Cereal Foods and Their Preparation, for Movable Schools of Agriculture. By Margaret J. Mitchell. Pp. 78. 1908.

Bulletin No. 213. Proceedings of the Thirteenth Annual Meeting of the American Association of Farmers' Institute Workers, held at Washington, D. C., November 16–17, 1908. Edited by W. H. Beal for the Office of Experiment Stations, and John Hamilton for the Association. Pp. 73. 1909.

Bulletin No. 225. Proceedings of the Fourteenth Annual Meeting of the American Association of Farmers' Institute Workers, held at Portland, Oreg., August 16–17, 1909. Edited by W. H. Beal for the Office of Experiment Stations, and John Hamilton for the Association. Pp. 51. 1910.

CIRCULARS.

Circular No. 51. (Revised.) List of State Directors of Farmers' Institutes and Farmers' Institute Lecturers of the United States. By John Hamilton. Pp. 14. 1909.

Circular No. 72. Report of Committee on Extension Work presented to the Association of American Agricultural Colleges and Experiment Stations at the convention held at Baton Rouge, La., November 14–16, 1906. Pp. 8.

Circular No. 75. Report of Committee on Extension Work to Association of American Agricultural Colleges and Experiment Stations, Lansing, Mich., May 28–30, 1907. Pp. 16. 1907.

Circular No. 79. Form of Organization for Movable Schools of Agriculture. By John Hamilton. Pp. 8. 1908.

Circular No. 85. Farmers' Institutes for Women. By John Hamilton. Pp. 16. 1909.

Circular No. 93. Organization, Work, and Publications of the Agricultural Education Service. Pp. 15. 1910.

Circular No. 98. Progress in Agricultural Education Extension. John Hamilton. Pp. 12. 1910.

SEPARATES.

Farmers' Institutes in the United States. By Dick J. Crosby. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1902. Pp. 25.

Farmers' Institutes in the United States. By John Hamilton. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1903. Pp. 57.

Farmers' Institutes. By John Hamilton. Reprint from Yearbook, Department of Agriculture, 1903. Pp. 10.

1316 Issued December 19, 1910.

U. S. DEPARTMENT OF AGRICULTURE.

OFFICE OF EXPERIMENT STATIONS—BULLETIN 231.

A. C. TRUE, Director.

COLLEGE EXTENSION IN AGRICULTURE.

DISCUSSIONS BEFORE THE GRADUATE SCHOOL OF AGRICULTURE, AT THE IOWA STATE COLLEGE, AMES, IOWA, JULY 4-27, 1910.

Edited by

JOHN HAMILTON,

Farmers' Institute Specialist, Office of Experiment Stations.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1910.

OFFICE OF EXPERIMENT STATIONS.

A. C. True, Ph. D., Sc. D., Director.
E. W. Allen, Ph. D., Assistant Director and Editor of Experiment Station Record.
John Hamilton, B. S., M. S. A., Farmers' Institute Specialist.
J. M. Stedman, B. S., Assistant Farmers' Institute Specialist.

119101

LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Office of Experiment Stations,
Washington, D. C., September 16, 1910.

Sir: I have the honor to transmit herewith and to recommend for publication as Bulletin No. 231 of this Office copies of addresses delivered before the Graduate School of Agriculture held at Ames, Iowa, in July, 1910, upon the subject of college extension in agriculture.

The great interest in agricultural extension that has recently developed among the colleges led to the introduction of this topic into the curriculum of the graduate school, and a number of gentlemen having experience in extension work were invited to occupy periods in the programme in discussing the problems that have arisen in connection with the organizing and conducting of this kind of work. At the conclusion of the addresses, which were extended at intervals over two weeks, it was the unanimous desire of the members of the graduate school to have them put in permanent form for distribution among those connected with the agricultural colleges who were unable to attend the school and among educators generally who find themselves compelled to meet the demand for agricultural information of college grade to be furnished people at their homes.

By my direction Mr. John Hamilton, Farmers' Institute Specialist of this Office, has collected the papers from their respective authors and has arranged them in bulletin form for publication.

Respectfully,
A. C. True,
Director.

Hon. James Wilson,
Secretary of Agriculture.

CONTENTS.

Page.

University Extension. By Dr. L. E. Reber 7
University Extension—Difficulties. By President Edwin E. Sparks 16
The Status of Agricultural Extension in the United States and in Other Countries. By Prof. John Hamilton 20
The Sphere of Agricultural Extension. By Dean Homer C. Price 31
The Sphere of Agricultural Extension. By President A. M. Soule 39
Problems of Agricultural Extension Work. By President Kenyon L. Butterfield 52
How to Make Effective the Teaching of College and Institute. By Supt. J. H. Miller 54
American System of Agricultural Extension—Organization. By Dean E. A. Burnett 61
American System of Agricultural Extension—Methods and Equipment. By Prof. P. G. Holden 67
American System of Agricultural Extension—Methods and Equipment. By Prof. G. I. Christie 73
American System of Agricultural Extension—Qualifying Teachers. By Dean Thomas F. Hunt 79

COLLEGE EXTENSION IN AGRICULTURE.

UNIVERSITY EXTENSION.

By Dr. L. E. Reber, *University of Wisconsin.*

The name "university extension," as it is now understood, does not necessarily imply work of university grade, but includes a comprehensive list of university activities having to do chiefly with nonresident beneficiaries, i. e., with those who receive benefits from the university, yet are not matriculated at the institution for courses of instruction. It includes, also, short courses and conferences not leading to a degree, offered at the institution, to attend which no qualification is required other than the ability to show that the work can be taken with profit.

The provision for an extra-mural student body, as has been implied, includes instruction of any grade—elementary, university, or graduate—and may or may not lead to a degree. It ranges from continued and systematic courses of study to a single lecture, or expert assistance in some phase of development of individual or community life. In this breadth of scope is seen the vital spirit that animates the new university-extension conception—the spirit of boundless liberality which would make useful to the entire people, in whatever place, in whatever walk of life, that great fund of knowledge which accumulates and is available at a university, be it the product of research, invention, scholarship, or special gift.

UNIVERSITY METHODS AFFECTED BY CONDITIONS IN PUBLIC SCHOOLS.

Were our elementary and secondary educational methods ideal, the character of extension work demanded of the state universities would undoubtedly be greatly modified. Were our schools preparing for the actual *realities* of life, whether in agriculture, manufacture, or commerce, extension could well devote itself to giving opportunity for continued study in more advanced vocational lines and to those humanitarian subjects that relate to the betterment of moral and social conditions among all classes of people.

In the last report of the United States Commissioner of Education some startling statistics are compiled. Of the 24,613,000 children of school age in 1908 he showed that about 17,000,000 only were enrolled in the public schools, and about 1,500,000 in private schools. Of the 17,000,000 in public schools the average attendance was a little over 12,000,000, less than one-half the children of school age. In a paper prepared by Professor Thorndike, of Columbia University, it is shown that in cities of 25,000 or more inhabitants, from every 100 pupils who enter the public schools, 90 continue to grade four, 81 to grade five, 68 to grade six, 54 to grade seven, 40 to grammar grade, 27 to first high-school grade, 17 to second high-school grade, 12 to third high-school grade, and 8 to the fourth high-school grade. Although these figures were prepared several years ago, there is reason to believe, judging from Doctor Brown's more recent report, that conditions have not materially improved; and when it is remembered that in cities of less than 25,000 inhabitants and in villages and rural districts the percentage of falling off is much greater, the need for some form of education supplemental to the existing system becomes apparent.

It is not my purpose to dwell upon the shortcomings of our public schools, nor to emphasize the fact, so forcefully presented by Dean Davenport, of Illinois, that the figures quoted would change greatly for the better if we recognized in our public schools the value of training for efficiency. The awakening to the need for a thoroughly organized system of public education is general, and the time is doubtless not far distant when the work of the schools will be so differentiated as after the earliest grades to offer opportunities for effective training to the future artisan as to the future scholar.

In the meantime the stability of our institutions is threatened by the increasing numbers of the uneducated or the helplessly educated who crowd our large cities. The present prosperity of the nation can not be attributed to the quality of the education she has offered her people; she has prospered, as some one has said, in spite of it, and is now confronted by a condition with which she is but poorly prepared to deal. Continuation schools, trade schools, apprenticeship courses, and reorganized common schools are all directed toward providing the needed remedy, but at present they are altogether inadequate to meet the demands. Agricultural educators have been in the lead in appreciation of the needs in this direction. The introduction of the short course in agricultural colleges with a minimum admission requirement was really the beginning of the part-time vocational schools, of which we hear so much at present.

EFFECTIVENESS OF UNIVERSITY EXTENSION AFFECTED BY COMPULSORY EDUCATION LAWS.

The field for university extension is so comprehensive that it can not be covered at once, but only by gradual and consistent growth continued through many years. The rapidity of this growth will necessarily be dependent, first of all, upon the funds available for the work. It will also be affected by the laws dealing with child labor and compulsory education. In a State where children are allowed to leave school at 11 or 12 years of age to engage in industrial pursuits, and where the hours of labor are unlimited, the conditions will not be as favorable for university extension as in States where children are required to remain in school until 16 years of age, and are restricted by law to a reasonable working day. A condition which in this country greatly hampers the effectiveness of extension education is the lack of compulsory education laws for the employed and of laws by which the employer is compelled to afford every employee under a certain age time for study.

EXTENSION ACTIVITIES AMONG RURAL PEOPLE.

The statistics quoted in the opening pages of this paper point to the yearly need for further educational opportunity of some millions of persons of school age. In addition to these, there are large numbers of mature men and women who desire vocational or cultural improvement, for many of whom university extension offers the only possible resource.

An interesting and valuable phase of the work has to do with choice of occupation. A great field of usefulness is open to the instrumentality that has for its object guidance of the individual, whether young or old, toward the selection of an occupation adapted to his abilities and his tastes. Many a man is a failure because he is in the wrong niche. In that situation neither contentment nor success will be his portion. The bootblack who is shown the way to fit himself for more remunerative and agreeable work, the clerk who is helped to achieve the broader usefulness for which he has ambition and capacity, in a word, every misfit who is assisted to discover and develop his peculiar abilities, becomes a more valuable unit to himself and his community.

A large proportion of our citizens, young and old, need to be informed upon the great questions that are attracting attention to-day and which may come to them at the polls for final disposition. Shall they be left largely to the political press and partisan speakers for guidance in such matters, or shall study of the live problems of the day be included in the advantages offered by a far-reaching and impartial educational system?

No department of education has done work of greater value in research and investigation than that of agriculture; nor has any department put its material into better shape for the uses intended. In other fields, however, there are scores of men at work for the State and for the Nation solving problems affecting industrial and commercial conditions whose results never reach the people at large, or do so only after costly delays. This information is gathered at a cost of millions of dollars, and would be of incalculable value if properly disseminated. It is not sufficient to know that coal should be purchased on the basis of the number of heat units in a pound, other things being equal, but this fact must be known to coal users or buyers if it is to be of real or commercial value. Results obtained by experts and specialists to be of general use must be put into simple and direct form and brought to the knowledge of the people. Educational extension should find a large usefulness in this work, and even in the department of agriculture no doubt much of value in governmental publications could by its agency be brought more effectively to the people.

ASSISTANCE TO CITY POPULATION.

On account of the remarkable growth of urban population, bringing with it new problems, municipal legislation has become more fundamental and of more direct interest to the people than state legislation. The individual pays more to the municipality in taxes than he does to the State. The enactments of the city council are frequently of more vital interest to the individual than are the acts of the state legislature. When one recalls that only a little over a hundred years ago but 2 per cent of the total population of the United States was urban, while to-day nearly 50 per cent is urban, the importance of municipal legislation is appreciated.

This centralization of population brings many and perplexing problems, and city councils are frequently inexperienced, with no means of securing information relating to the best methods of solving their difficulties. On the one hand is experienced an awakening to the need for better municipal government and recognition that this country is far behind many foreign countries in city administration. On the other hand is manifested a dangerous willingness to experiment. No business organization would undertake a new department of activity without thorough acquaintance with whatever had already been done in similar enterprises. Certainly, councils whose legislation affects so many individuals and interests should be even more desirous of becoming informed and should insist upon the establishment of bureaus for securing and distributing such information as is required.

Large municipalities can afford to establish bureaus of their own, manned with experts, and in a number of cities this is being done; but such a course is absolutely impossible for the smaller municipalities and rural districts.

A university offers exceptional facilities for carrying on this work. Material relating to past legislation and its results can be gathered and filed by those trained for this work, and all questions which require special technical knowledge can be referred to experts belonging to the university staff. A question relating to sanitation, for instance, would be referred to the sanitary engineer, or possibly to a specialist in biology or hygiene. A question of street paving or road building would be referred to the expert on roads and pavements. If on playgrounds, it would be referred to the proper expert.

There seems to be no sufficient reason why our state universities should not do for cities, towns, and townships what has been done so admirably in some States for the legislature by legislative reference bureaus.

CREATE INTEREST IN AND AID IN SOLVING PUBLIC QUESTIONS.

University extension may legitimately be called upon to create and foster public interest in all current questions. The people need information on such matters as the election of Senators by popular vote, the guarantee of bank deposits, good roads, the wheel tax, commission form of city government, woman suffrage, the recall, etc., if these questions are to be disposed of intelligently. Existing organizations, such as civic clubs, women's clubs, business men's clubs, commercial clubs, debating clubs, etc., and groups of people needing only a suggestion to lead them to form themselves into clubs, are ready and desirous of taking up these questions for discussion. There should be available for their use classified reference lists, and for the population remote from libraries collections of newspaper and magazine articles, books, and state and national publications to be lent under definite regulations free of cost.

COOPERATION WITH STATE TRAVELING LIBRARY COMMISSIONS.

Valuable assistance may be afforded by the publication and distribution of bulletins formulating subjects for debate and containing full lists of references on negative and affirmative sides, with information as to where and how this material may be obtained. State traveling library commissions should cooperate in the work. In fact, as traveling libraries have such an important relation to all university extension work, it may be advocated that the traveling library commissions be given an organic relation with university extension. Typical package libraries, adapted to high-school use in the preparation of graduation themes and debating work, may be used to awaken interest among boys and girls on current questions. It has been found that high-school teachers are glad to divert their students from the old stereotyped subjects for graduation theses to live, modern ones, provided reliable information is available.

EXTENSION A BENEFIT TO ALL OCCUPATIONS.

Agricultural extension workers have done so much for the farmer through institutes, exhibits, and demonstrations that there is no necessity to speak here of the value of this kind of work. Its possibilities in other lines than agriculture are equally great. Bakers are much in need of scientific knowledge simply and plainly expressed by experts who have made a study of their problem; clay workers and plumbers, as well as those engaged in all other industries, need information which can well be given by institutes and demonstrations. Problems in sanitation, civic betterment, town promotion, and many others may also be solved by similar methods.

SHOULD THE UNIVERSITY BE THE SOURCE OF EXTENSION TEACHING?

It is a question admitting of difference of opinion whether or not the university is the source from which extension teaching in its present development should emanate. The question admits only of an affirmative answer so long as there is no other agency prepared to do the work.

Much may be said in favor of this policy. For instance, a system presenting such immense possibilities of usefulness to the whole people as the extension method of education should be made an organic part of the state educational work. It must have assured and liberal support, which only the States can provide, in order to secure permanence of establishment and growth, and for economy and convenience it should be attached to the head of the state system of instruction, the university, where the equipment is always available for its use. The value of such association has been demonstrated in the success of agricultural extension, the establishment of which would not have been possible separated from the agricultural college, whose faculty and material equipment are fundamentally essential to its usefulness. Extension work in agriculture has also had a wholesome reflex action upon the academic departments of the university. Evidence is not lacking to show that the quality of work in the institution is not impaired, but rather strengthened through the intercourse with the people of the State, which extension teaching brings.

METHOD OF ADMINISTRATION.

If it is granted that the state university is the natural and proper guardian of the educational interests of the people of the State, and that the institution is therefore under obligation to those who can not enter her walls equal to that she owes to her resident student body, we are then confronted by the question of the method by which every part of the State shall be effectively and thoroughly reached by the university without duplication of machinery. In order to cover the field without duplication of effort, it is probable that no method can be absolutely successful which does not involve division of the State into districts having local headquarters from each of which the various activities of extension shall be promoted within the limits of its territory. The form of organization may be compared to a great wheel of which the hub is the university, the rim the boundaries of the State, and the spokes the lines which divide the whole into districts. At the hub or central headquarters will be located the dean or director, the several secretaries of departments, and the specialists who offer lecture courses, prepare and correct correspondence-study lessons, publish bulletins designed to aid the student in the study of topics for debate, or gather, classify, and hold ready for the inquirer instructive literature on a wide range of subjects useful to the student as a private individual or as a citizen of State or municipality.

At the district headquarters will be placed a superintendent, field organizers, and local teachers. They must have, in addition to offices for administrative purposes, class rooms, laboratories, and library facilities, conveniently situated for the use of groups of students.

THE EXTENSION STAFF.

The problem of finding a staff of extension workers possessing the very special qualifications required is a serious one, but extension teaching is itself assisting in the preparation of suitable men and women to carry on its work, and, furthermore, with the introduction of new methods extension has ceased to depend solely upon a staff of lecturers who must combine the qualities of public speaker, scholar, and philanthropist. An organization similar to that outlined in the foregoing pages so differentiates and distributes the work that there is no longer the necessity, as in the older forms of university extension, to find men who unite in their individual persons a large number of qualifications. Nevertheless, it must be recognized that certain qualifications in the extension worker are of essential importance. The district representative, for instance, must be selected with the most painstaking care, and must combine the tastes and training of a social worker with business acumen and acceptable personality. His business training should be sufficient to enable him to understand conditions in his community as they are affected by business relations. If the leading industry of his district is agricultural, he should possess knowledge of agricultural interests; if manufacturing, he should be more or less of an engineer; if commercial, he should be acquainted with commercial processes. He is, however, not a specialist. He is the representative in his district of all the specialists of the university, and the amount of specialization required of him is only enough to give him an appreciation of the problems arising from the chief activities and occupations of the people he desires to serve.

DISTRICT ORGANIZATION AND WORKERS.

The district organization will include a corps of workers adapted to the interests of the district. In an industrial or commercial region the assistants must be experienced in securing registrations for and organizing correspondence-study classes. Teachers, assistants, specialists in the various subjects in which classes have been organized, will meet the correspondence students weekly, or biweekly, as may seem desirable, to encourage and stimulate them.

These teachers may be a part of the regular university staff, located permanently in the district and giving their entire time to the work, or they may be engaged from among such teachers or practical men resident in the community as are specially qualified to give instruction and help in this work, or they may be sent out from the university. It will frequently be possible to secure the service for night classes of engineers or other men engaged in professional work, who have the right attitude of mind and whose official position and wide experience make them acceptable.

THE INDUSTRIAL STUDENT.

The intimate association of teacher and student secured by district organization is very important to that large class of persons for whom extension teaching through correspondence study offers exceptional opportunities, the industrial employee. This would-be student, though frequently mature in years, is immature in mental processes. He generally has no fixed habits of study, is unaccustomed to confinement out of working hours, has an imperfect idea of the benefits to be derived from a course of study applied to his vocational employment, may be burdened by home cares, and as a rule can spare with difficulty from his earnings the fee for instruction, however small.

For this student the local superintendent and teacher are essential. Frequently he must be taught his need, must be inspired to begin a course of study and encouraged to continue it, must be continually helped over hard places, and must be shown in his shop or in the local laboratory the direct application of his lesson to the industry in which he is employed. He must experience the benefit of occasionally meeting in the class room other students, with whom he may compare notes, and whose experiences may be helpful to him.

In its final fulfillment this plan of organization provides for the industrial worker, vocational training adapted to his special needs. In mining districts, classes of correspondence students shall engage under local direction in courses of study designed to improve their proficiency in mining engineering; in manufacturing districts, shop mathematics, machine construction, and other subjects fundamental to mechanical processes engage the student; in commercial centers, business courses; in rural districts, agricultural subjects are offered—in fact, university extension effectively administered through district organization offers vocational training in every part of the State directly applicable to the prevalent conditions.

COOPERATION WITH SCHOOL SUPERINTENDENTS.

An important office of the district representative is to discover through cooperation with school superintendents and teachers the whereabouts of boys and girls who have left school upon or before completing the work of the elementary grades. It is with this class that much can be done by first helping them to recognize their own latent possibilities, and then offering them the opportunity by which their abilities may be developed.

ORGANIZATION OF CLUBS AND FORMATION OF CLASSES.

Other activities of the district representative will include the introduction of lecture courses suited to the people of his region; the organization of debating or other clubs; the formation of classes; the spread of library facilities; the opening of laboratories; the promotion of educational measures in business organizations; the assistance of town or rural community in civic or social improvements; conduct of institutes or conferences of special interest to a limited class of persons, such as tradesmen, farmers, home makers, students of social conditions, etc. The number and variety of his activities is too great for enumeration. The district representative's acquaintance with the various organizations in his district which have for their object industrial, social, or civic betterment will enable him to place the university at their service.

MAINTAINING INTEREST.

Frequently in great movements much effort is wasted in the creation of interest and enthusiasm, which is permitted to dissipate before it is crystallized into permanent form. The crusade against tuberculosis, civic-improvement problems, and many other similar movements of vital and far-reaching influence would be advanced more rapidly through cooperation with a district field organization. Specialists from the university, when necessary, might be assigned temporarily to a district to make a survey of conditions and develop permanent organizations in conjunction with the district force, whose acquaintance with the conditions in the district would secure the approach to the problem required if local interests are to be enlisted. Organized social centers in the schoolhouse or church with their educational features present an ideal channel through which to reach the people of a community, whether in city or county. Here civic clubs, farmers' clubs, mothers' clubs, etc., meet, and, in fact, here would be the natural center from which would emanate practically all the social, civic, and industrial activities which have to do with the betterment of the community, the university assisting in every way possible, always in a spirit of helpfulness and cooperation, but continually encouraging independence and initiative in the local organization.

Provided with lists of the available publications for free distribution either from the university, from Washington, or elsewhere, the university representative would secure and place upon mailing lists the names and addresses of those who would be benefited by any particular publication. By this means results of research and investigation, frequently of vital importance to industries and individuals, would be made effective. There is to-day, so far as I know, no good method of properly disseminating the results of research and investigation. Those who need it most are frequently the last to know how to secure it. In fact, an expert is required to handle this problem.

The number of extension workers in a district would depend upon the work to be done and the size of the district. If the area is not too great, the district might have a population of from 100,000 to 150,000 persons. A single city, however, having a greater population than 150,000 would constitute a single district.

EFFECTS OF EXTENSION.

Examination into the status of extension teaching in the United States discloses a remarkable broadening and liberalizing of the academic spirit. The uniting of eight leading educational institutions in and around Boston, including Harvard, Tufts, the Massachusetts Institute of Technology, and others, into a commission on extension teaching is a striking departure from the old idea of higher education. The fact that they have agreed upon a course of instruction leading to the degree A. A. (associate in arts), with no entrance examination requirements and no resident work demanded, is an evidence of the great change that is taking place in the educational attitude in conservative New England.

In the state universities a similar spirit is manifested in a greater variety of ways. The state university recognizes a responsibility to a more definite constituency, the people of the State who support it. That this constituency shall be served by the university in every way in which the university is the best instrument to render the service is a part of the new educational creed.

RESPONSIBILITY OF THE UNIVERSITY IS TO CITY AND COUNTRY ALIKE.

No attempt has been made in what has been said to separate the urban and rural problems. In many respects they are the same, and the state university has a responsibility to all alike. Rural problems are not limited to technical agriculture any more than the problems of a manufacturing municipality are limited to technical matters relating to the products manufactured, nor are they limited to agricultural population. The lumberman, the miner, and others may be isolated and should be considered in any extension educational movement. Much work may be done in remote districts in the introduction of enlarged interests, social and educational.

Rochester, N. Y., is a splendid example of what can be done in a city to bring together the social, racial, political, religious, and other groups in schoolhouse centers, all working together for a common end, namely, the good of the community. While something of similar character has been done in rural districts, much more is needed. Surveys of rural communities are in many respects as essential as surveys of municipalities. Church groups, school groups, farmers' organizations, trade organizations, amusement associations, and athletic clubs need to be federated and work together on all those problems which are of common interest much the same in rural districts as in congested centers. Problems of hygiene and sanitation, of foods, care of the sick, or improved conditions of living, and many others common to all communities, and each, whether rural or urban, requires its own solution.

The needs, therefore, are similar, although differing in detail, whether in urban or rural districts, and the kind of organization which will reach the one will reach the other. The effectiveness of the work done, whether vocational, social, or cultural, will depend upon the character of those engaged in it. If it is distinctly understood that only those who have the special training and qualifications essential for the work shall undertake it, success is assured; otherwise, failure, as has been said before, is almost equally certain.

THE COST OF EXTENSION TEACHING.

The cost of extension teaching, state-wide in its application, must necessarily seem formidable, but not only does the system promise a degree of amelioration of industrial and other conditions, but it brings immediate and substantial returns in increased productive power of the trained over the untrained worker.

In 1908 the sum of $371,344,410 was expended for elementary and secondary education in the United States, which, as shown by Doctor Brown's figures, reached at any one time less than 75 per cent of our boys and girls of school age; $35,664,390 was spent on higher education for less than 281,000 young men and women. If this expenditure of over $400,000,000 is justified for the education of three-fourths of our children—and no one will question it—are we not obliged, indeed, are we not under moral compulsion, to make adequate provision for the remaining fraction of those of school age who, with the men and women desiring and needing further education, a number which must be reckoned in millions, receive little or no benefit from the advantage offered by the established system of public education?

UNIVERSITY EXTENSION—DIFFICULTIES.

By President Edwin E. Sparks, *The Pennsylvania State College.*

The first difficulty is the objection that extension is not an obligatory or even legitimate function of a college or a university. This view was held some years ago by many fair-minded men, and especially by teachers in college and by members of boards of trustees of collegiate institutions. They maintained that the function of a college or a university is essentially intramural; that the institution fulfills its duty when it gives instruction to those who are registered as students within its walls. They held also that the attempt to carry instruction to the public at large will weaken and cheapen the regular college work.

OBLIGATIONS OF TAX-SUPPORTED EDUCATIONAL INSTITUTIONS.

The reply to these objections is that the land-grant college or university is a tax-supported institution and thereby becomes in effect a public-service corporation. If only the parents of college students paid taxes in its support, the obligation of the institution to provide instruction might properly be limited to those who reside within its walls, but since all the people contribute to its maintenance they, too, become entitled to recognition in the way of educational service. The justice of this is recognized by the objectors themselves in their attitude toward the research department of the college. They not only do not restrict the advantages of the discoveries and demonstrations of the experiment station to resident students, but without exception approve of the widest possible dissemination of the information thus secured among the people.

To the possible claim that the college or university is open to all who will come to its classes it may be replied that the experiment station is also open to all who wish to take advantage of its services. It is in recognition of the fact that the people can not come to the station that information is sent to them at their homes. On the same principle extension teaching by the college is not only justified, but has become an obligation that can not longer be ignored. A fuller understanding of the aims and methods of this new movement is all that is needed to convince those who hesitate to undertake this work that agricultural extension is a legitimate enterprise on the part of the institution, and one that in time will doubtless equal if not surpass in public benefit the intramural instruction.

To the allegation that carrying instruction to the public at large will weaken and cheapen the regular college work it may be replied that to attempt to carry on extramural work on a worthy scale by means of the regular teaching staff will be found detrimental to the class room and laboratory and unfair to the students in residence at the college. The regular college work in many agricultural schools is seriously hampered at present by the frequent and large demands made upon the instructors for outside work. No teacher of languages or mathematics would think of leaving his classes for two or three days each week unprovided for, nor would earnest students long tolerate such conditions. The difficulty will have to be met by having a special force of instructors whose time shall be given largely to the extension field.

The maintaining of such a force in highly effective working condition is not without its difficulties. The method of employing a special staff of extension workers entirely divorced from college teaching is open to the objection that in course of time these instructors in extension work become out of touch and to some extent out of sympathy with the other departments of the institution. The laboratory, the experiment plat, and the class room are fountains of inspiration as well as of knowledge, and no extension man should be carried so far afield that he can not occasionally return to these fountain heads. An ideal arrangement would be to have a staff for extension work whose members would devote a portion of the year to intramural and the remainder to extramural work. This requires so large a total force of instructors or experimenters that only the larger institutions can afford the expense. The difficulty might, however, be partly met by having a fourth or summer session of the college, which would permit some of the regular instruction force to be absent at various periods from the institution, and would allow substitutes to be drafted from the extension staff temporarily to take their places in the college. This would tend to keep the extension workers in contact with class-room instruction and station experimentation, thus preserving the integrity of the educational activities of the college in all of its departments.

STATE APPROPRIATION.

If it is true that the extension feature requires a special force for its efficient operation, it is equally true that to officer and equip such a force will require special appropriation, except in the case of very liberally endowed institutions. Lack of funds for the proper equipment of the extension department is perhaps the greatest difficulty that now exists in the way of organizing and conducting this work; and until the institutions are supplied with adequate funds for extension purposes the work of the institution in this direction must continue to be inadequate.

To cite a specific instance, we shall attempt nothing in Pennsylvania in the extension field beyond the experimental stage until the matter of separate maintenance is settled. We expect to present to the next session of the state legislature the results of such experiments as we have been making in the shape of agricultural instructional trains, the good-roads car, night schools in cities, farmers' week, apprentice classes in shops, mining-institute instruction in safety devices, women's literary club programmes, and similar undertakings, and we shall probably say to the members of the legislature that we can not continue these activities, or, in other words, we can not go beyond the experimental stage, without special financial aid. Fortunately there is no line of work that appeals so directly to the mass of people as extension work, and consequently there is every reason to believe that the legislature will be responsive to the calls that are made upon it for expanding educational activities in these directions.

CAPABLE TEACHERS.

Even if adequate support be granted, the institutions will immediately encounter another difficulty, equally great, that of securing the proper kind of teaching force to carry on the work. To attract and hold a general audience in the discussion of an educational topic is a much more difficult task than to teach in a class room where attendance is required and attention is secured by an examination and credit on the college books. Knowledge of the subject is not the only requirement for the extension worker. It is one thing to lecture to a class of students in a class room where there is abundance of time for properly presenting the subject, and it is quite another thing to hold the attention of an audience of farmers unaccustomed to following an address, or an audience of miners who have deep-seated contempt for college theorists, or an audience collected in a railway coach in a good-roads train, where attention must be secured and a telling message delivered all within the space of twenty minutes. It is one thing to follow an experiment in the quiet of a laboratory under the spell of enthusiastic discovery, and quite another to go into an orchard, a dairy, or a shop and persuade the proprietor to give your experiment a trial. In the latter case you are often compelled to overcome ignorance, bigotry, and prejudice before the message that you have to deliver will be received. It is no easy task to take a school of apprentices, noisy, unaccustomed to discipline, untrained to methodical mental effort, and mold them into studious and methodical draftsmen or mechanics. Extension work calls for that rarest of human powers and most exhaustive of human faculties—personal magnetism. It is not without significance that of the scores of men who have been tried out in the extension department of the University of Chicago along the single line of lecturers in literature, history, etc., less than one-third achieved a sufficient degree of success to continue them in the work.

TACT.

Another difficulty confronting the institution that is endeavoring to secure men for extension work is that of finding workers who have what may be called diplomatic skill. It is a rather delicate matter for a stranger to advise a mill owner or a farmer of long experience that the methods he has pursued in the past are altogether wrong, and unless the suggestion is put in a tactful or diplomatic way there is danger of giving offense and of prejudicing the individual against the expert and the institution that he represents.

To overcome deep-seated attachment for old practices and secure action along new and improved lines is no small task, and yet this is precisely what the extension worker is employed to effect. He needs for this more than mere expert knowledge of the processes he recommends; he must have in addition sound judgment and accurate knowledge of human nature. To possess these he must have mingled with men and have learned the art of expressing opinions and giving advice in a polite and considerate way. In short, he must be discreet and be a good " mixer."

COOPERATION.

The difficulty of securing proper cooperation by all of the departments of the college or university in extension work will in some institutions be found to be quite serious. While extension should have a definite head and a definite staff of lecturers and demonstrators, it should represent a cross section, if you please, extending through all departments of the institution. To support one system of extension work for the school of agriculture or the school of engineering, separate either in management or activities from other schools, or distinct from the extension departments of the institution as a whole, is not only uneconomical and disorganizing, but it invites dissension and jealousy, and foredooms the venture to general debility and early death. The fact must be recognized that intramural instruction is one function which runs through every activity of the university, and that extramural instruction is a coordinate function extending coequally with the other. On no other assumption can extension find a permanent foundation.

CONCLUSION.

Before closing I wish to present one more difficulty in the path of the extension worker. In presenting it I have no desire to recall unpleasant memories of rivalries between institutions of higher learning in any individual State in which they may have occurred. But we may as well face the fact that any state institution which enters systematically and extensively upon the task of extending its benefits to all parts of the Commonwealth may expect to arouse suspicions on the part of other institutions of a desire to proselyte or to grow at the expense of its neighbors.

There are alumni of various colleges scattered all over each State, zealous for the growth of their respective alma maters and sensitive when infringement of rights are threatened. They have long since discounted eleemosynary motives; they "fear the Greeks," even "bearing gifts." They look upon a statement of obligation resting upon a state institution to benefit the taxpayers by organizing extension departments as a subterfuge to gain the affections of the people and to undermine the other colleges. I have no remedy to offer for this difficulty other than enlightenment, diplomacy, and patience. Extension work should avoid even the appearance of proselyting; its workers should be warned against this, and every precaution should be taken to keep good faith where there are sensitive rivals.

In presenting these difficulties I hope I do not seem to argue against the plan of continuous education. While I regard the regular college course as more necessary at the present time than in any previous history of the world, at the same time I look upon the great field of extension as the opportunity of the age. It has come to us before we are prepared and, as we are free to confess, before we at all comprehend what it means. What I have said has been in the way of pointing out some of the difficulties that the institutions taking up extension work are sure to encounter, with a few suggestions as to the methods by which these difficulties may be partially overcome.

THE STATUS OF AGRICULTURAL EXTENSION IN THE UNITED STATES AND IN OTHER COUNTRIES.

By Prof. JOHN HAMILTON, *Office of Experiment Stations.*

WHAT AGRICULTURAL EXTENSION AIMS TO DO.

While the final effect of agricultural extension will be to improve and elevate the individual, yet its immediate purpose is to increase production. If there was no immediate or prospective need for adding to our supply of the physical necessities of life, extension work in agriculture, at least from a national point of view, would be unnecessary. The fact that our present production is certain to be inadequate for the comfortable support of future population is the reason why the extension movement for introducing better methods has been begun.

From the governmental standpoint agricultural extension is a business proposition. It undertakes to do for men engaged in agriculture what proprietors of mills and manufactories are striving to accomplish in their business—conserve waste, economize effort and material, and increase the output with reduced expense. It strives to do with and for a *man* that which a manufacturer desires to have done for his *machine*—improve it that it may turn out more and better quality of product.

HOW IT IS PROPOSED TO CARRY ON EXTENSION WORK.

Until recently such extension work as has been performed has been by farmers' institutes, the grange, the agricultural society, the local club, and the various societies organized to promote the interests of special departments or lines of agriculture. Most of what has been done has been of a more or less desultory character, without coordination, central direction, or systematic plan for securing definite results.

It is now proposed to systematize the work and conduct it under the leadership of the agricultural college. This duty was formally assumed by the agricultural colleges a year ago at the Portland meeting, where the constitution of the Association of American Agricultural Colleges and Experiment Stations was amended to admit extension work upon a par with interior instruction and research. This action, taken by almost unanimous vote, virtually pledges the colleges to undertake extension work with the same vigor and breadth of view that they have manifested in the past in conducting interior instruction.

Familiarizing the great mass of agricultural people of the United States with the scientific and economic truths that control production, and doing this in a way and to an extent that will enable farmers to materially increase the value of their domestic animals and the yield of their cultivated fields, is a task of such proportions as to be simply overwhelming, and yet this is what the land-grant colleges and experiment stations of this country have deliberately undertaken to accomplish.

Appreciating the great need for full information respecting the best methods for carrying on this work, the Office of Experiment Stations has collected such data as were available with a view to assisting those who are planning for the future conduct of this work and are responsible for its success.

Believing that the members of this graduate school are deeply interested in this new field of effort into which many of you will no doubt soon be called, some of the more prominent facts that the investigation disclosed have been selected for presentation before you this evening.

The title of the paper suggests the points to be discussed: The Status of Agricultural Extension in the United States and in Other Countries.

Your attention is first called to the situation here at home. What is the status of agricultural extension in the United States?

STATUS WITH RESPECT TO APPRECIATION BY THE PUBLIC.

Its status with respect to appreciation by the public is all that could be desired. The advertising that this work has received through the farmers' institutes, agricultural bulletins, by the experiment stations and the national and state departments of agriculture with such demonstration work as showed the practicability of the plans proposed, has prepared the way for the introduction of agricultural education in more permanent form into rural communities. Enough has been done to make clear the value of agricultural science when properly applied, and there is now an almost universal demand on the part of the better and more intelligent farmers for systematic instruction in methods best adapted to their condition. The prejudice that once was general and very pronounced against scientific agriculture has given way to cordial acceptance of its value by farmers as well as by urban people.

THE ATTITUDE OF EDUCATORS TOWARD EXTENSION WORK.

When agricultural education was first introduced educators of the old school regarded it with greater or less degree of contempt; later, as it developed, they viewed it with jealousy, and now it is generally commended and the principles which it has advocated have been adopted to greater or less extent by every educational institution in the land. This has all taken place in the past fifty years.

Agricultural extension has had much the same ordeal to undergo. It began in a very humble way about twenty-five years ago in the form of farmers' institutes. The colleges then regarded it as a very primitive method of education, proper enough for local people in affording an opportunity for the exchange of individual views, but not adapted to use in the discussion of the more abstruse problems of agriculture by scientific scholars. As scientific teachers appeared on the institute platforms and were subjected to questioning by practical men who had been dealing with rural problems for many years their respect for farming people was rapidly increased until to-day no scientist dares to appear before an institute audience without preparation far more careful and complete than any which he makes for a college class.

Educators have changed their attitude respecting the character of extension work, and are now chiefly concerned not in knowing how elementary their instruction shall be, but how the profoundest truths of science may be formulated so as to be of direct practical value to the man who hears. Experiment-station experts, college professors, university presidents, statesmen, scholars, and all who have a message now court the opportunity to present their teaching to these audiences that once were considered too crude to deserve a serious thought.

No man now is too well equipped for giving instruction before country people, or too scientific not to be understood by many of those whom he addresses. No college man now loses caste in appearing in extension work. The best are none too good, and the ill-equipped are altogether out of place.

INSTITUTIONS ENGAGED IN EXTENSION WORK.

At the beginning of 1910 thirty-three colleges and stations had organized departments of agricultural extension representing the following States and Territories: California, Colorado, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Montana, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, Utah, Washington, West Virginia, Wisconsin, and Wyoming. In a number of these States the work is just being inaugurated, while in none of those reporting excepting New York does it extend back beyond 1901. In that year 1 was organized, then followed 3 in 1905, 3 in 1906, 5 in 1907, 3 in 1908, 9 in 1909, and 3 in 1910 up to February of that year, or 27 in all. The following are the dates at which the work was begun in the several States: California, 1907; Colorado, 1905; Florida, 1907; Georgia, 1909; Hawaii, 1909; Idaho, 1910; Illinois, 1901; Indiana, 1908; Iowa, 1906; Kansas, 1906; Louisiana, 1909; Maine, 1906; Massachusetts, 1909; Michigan, 1908; Minnesota, 1910; Mississippi, 1909; Montana, 1910; New York, 1894; North Carolina, 1909; Ohio University, 1909; Ohio Experiment Station, 1905; Pennsylvania, 1907; Rhode Island, 1905; South Carolina, 1909; Utah, 1907; West Virginia, 1907; Wisconsin, 1909; and Wyoming, 1908.

It will thus be seen that this movement in its organized form is quite recent and is therefore in its primitive period of development, only five States of all of those reporting having organized extension departments prior to 1906.

EXTENSION FORCE.

The number of persons connected with the extension work in 31 States and Territories is 92. This does not include members of the college faculties and experiment station staffs who contribute only occasional service.

Ten States have each only 1 man in their extension departments; one State has 2; six have 3; one has 4; two have 5; three have 6; one has 7; one has 9; and one has 14, regularly employed which is increased to about 30 during the active season for holding extension schools. In no State is the number employed in extension work at all adequate for the service that should be rendered and in no State does the present organization of the teaching force in extension represent the ideals of those responsible for providing for carrying on this work. The best that can be said is that it is a start in the right direction and is a recognition of responsibility on the part of the governing boards of the colleges for extending college service to the mass of rural people who can not leave their homes to go to school.

EQUIPMENT.

Apparatus necessary for interior instruction work in agriculture has multiplied in recent years until now entire buildings are devoted to the storing of agricultural machinery; barns are filled with horses, cattle, sheep, and swine; hundreds of acres of land are utilized in demonstration, and granaries are filled with samples of feeds, all used for illustration in instruction work to resident students.

It is clear that if instruction in agriculture along extension lines is to be equally efficient with interior instruction to college classes it will be necessary to equip the extension departments with corresponding facilities for doing work. Hitherto the extension worker has been embarrassed for lack of illustrative material. Equipment in this direction will be one of the first expenses that the extension department will have to meet. At present the supply is very meager in every institution, excepting two or three. There is lack of charts, of photographic slides, of samples of grains and seeds of every kind, of animals suitable for demonstration purposes, as well as of demonstration plats in the various communities for use in reference and for verification of the teaching in the respective extension schools. The status of agricultural extension, therefore, in all of these respects is very far below the manifest necessities of the work.

APPROPRIATIONS.

Definite appropriations were made for extension work in 1909 amounting to $301,780. This sum was contributed by 23 States and Territories, and is distributed as follows:

California	$23, 500
Florida (colored)	80
Florida (A. and M.)	1, 000
Georgia	10, 000
Hawaii	100
Idaho	2, 000
Illinois	8, 000
Indiana	10, 000
Iowa	32, 000
Kansas [a]	26, 000
Louisiana	3, 600
Maine	900
Massachusetts	7, 500
Michigan	3, 000
Minnesota	25, 000
New York	50, 000
Ohio (college)	20, 000
Ohio (station)	19, 600
Pennsylvania	10, 000
Rhode Island	2, 500
South Carolina	500
Utah [a]	5, 000
Washington [a]	8, 500
West Virginia	3, 000
Wisconsin	30, 000
Total	301, 780

To this should be added the amount used by the several States for extension work from the farmers' institute fund, of which no separate account was kept.

It will be seen that less than half of the States and Territories made appropriations for extension in 1909, and that four of those reporting have given altogether a sum less than $1,600 ($1,580).

---

[a] Combined with farmers' institutes.

Here is a work that the colleges have undertaken, which to be effective in its highest degree must reach 98 per cent of the agricultural population of the United States, or approximately 30,000,000 of people, with agricultural information of most reliable and practical character and having less than a half of a million dollars with which to do it.

ORGANIZATION.

In organizing for carrying on extension work a primary duty will be to define its status with relation to the other departments of the college. The institution as a whole has undertaken three distinct lines of operation. One is giving instruction to resident students, another is investigation and research, and the third is exterior or extension work. Altogether they embrace the field of operation of the institution known as the college of agriculture.

The relation of the department of interior instruction and that of research and investigation to each other has been fairly well defined. Precisely how extension work is to be related to these two departments has not been so satisfactorily outlined. Shall this new department represent and consequently be under the immediate direction of the department of interior work, or shall it be the expert or field agent of the department of investigation and research and be under its direction, or shall it be separate in its organization from both of these departments and carry on its work along lines that it shall mark out for itself representing the work of both of the other departments of the college and also other work by other colleges and stations both in this country and abroad? Shall it have selective power? Authority to choose from any source whatever seems to be best calculated to make the work of extension most valuable to the individual farmer, or shall it confine itself to exploiting only the work of the institution of which it is a part? These are questions that have arisen, and which different college authorities have endeavored to settle. At present the whole matter is unsettled, and possibly will remain so for some time to come, at least until experience is gained and the practical workings of the various methods have been tested and their comparative value shown.

Possibly the discovery of the most efficient organization may be assisted if the matter is considered not from the college and station standpoint so much as from the character of the work needed to be done, and then frame an organization adapted to meeting the requirements of those whose interests are to be subserved; in other words, consider the question in the light that the extension department is not primarily to exploit either the college or the station, but to aid the great body of agricultural people; to show the way to a better agriculture, and if necessary to lead them in that way by actually doing the things that the extension teachers recommend.

If this method is adopted, the first inquiry manifestly is, What do farming people in any State need to know; in which direction are they most in need of aid? If this is found to be cotton, corn, wheat or grass, live stock or poultry, organize along these specific lines, and leave out minor matters, notwithstanding they may have been part of the college or station operations, until the extension work has progressed and until more money and a larger number of workers can be secured.

If the organization is determined mainly from the college or station standpoint, there will be danger of overloading the extension department with a corps of specialists representing too many lines of effort, with none thoroughly equipped for making a permanent impression upon the particular industry or crop or line of work that most needs development in that State. A proper balance in the instruction should be preserved which will apportion the efforts of the extension department according to the importance of the several interests to be developed. In short, a careful study of the agricultural situation in the State with a view to developing that which will be most valuable in the end will be necessary, and then organize for securing that development in the most effective way. In other words, the extension department may be an extension of the college or the station in a particular State, and it may not; it may be much more than either or both of these. It may need to undertake work that the college and station have both neglected or have performed in a perfunctory and inadequate way. It should do that which shall be for the highest good of agriculture in the State and which will benefit the largest number of those engaged in this industry. In all cases, however, use should be made of the expert knowledge of both the college and station force in promoting the work so far as that expert knowledge is along the lines that the extension department has undertaken to develop. Nevertheless it does not follow that because a man is an expert in some agricultural subject he should have a place provided on the extension force. The matter that he teaches may be of great importance to many districts, but in that particular State it may be of minor value, and other and more important subjects should be considered first.

COURSE OF STUDY.

A definite extension course in agriculture leading from one degree of acquirement to another until a full and logical line of study shall have been completed has not yet been put in operation. The work in this respect is undeveloped. Comparatively little also has been done in the way of systematizing the work of students in extension courses, or in connecting the courses with subsequent or what may be termed post-graduate instruction. Scarcely any attempt has been made to enlarge the student's knowledge of the subject studied by requiring him to consult authoritative references in the shape of bulletins and books, or by obliging him to continue the study after the school period has expired.

The extension instruction given in a community in order to accomplish its highest end should be the beginning of a course to be continued after the teachers have completed their work. Provision therefore should be made for keeping the college extension department informed as to the future progress of the students, in order that, when necessary, assistance may be rendered by the central office and the students be encouraged to complete the course.

In constructing courses for extension work the fact should be kept prominently in mind that they are to be "business courses." Extension in agriculture is not primarily for mental development, nor is it mainly for general culture, or for gaining technical expertness in chemical analysis, microscopic work, or other analytical methods. The course is to show how truth obtained by scientific and practical men may be applied in securing profitable production.

It can show this in several ways: By demonstration in laboratory, orchard, stable, or field; by ocular witnessing through lantern illustration, or by the use of models and charts, or by oral instruction. Agricultural extension is practical in all of its phases. It deals with realities as they exist or may be made to exist by intelligent improvement. What is taught must be capable of being applied and be valuable in a commercial sense. The mission of extension is to introduce a profitable agriculture and to see that it is maintained. It is an information distribution service, but not by the broadcast method of the past. It selects individual men and women and gives them the special information that they need as individuals and gives enough of it to be of service in a practical way. The method is by showing rather than by depending solely upon telling.

PREPARATION OF TEACHERS FOR EXTENSION WORK.

Extension in agriculture is, as has been intimated, a business enterprise. It is a business enterprise in the sense that it is an organized effort to make agriculture more profitable and increasingly so each succeeding year. If extension fails to increase the farmer's profit from his business, it will have failed in the central purpose of its organization. It follows, therefore, that those who are to be teachers in this extension movement must be able to show how the net profits of the business that they are to improve can be increased year by year.

How shall teachers be prepared for this service? Unless such men can be had the extension work will be a failure. We have no institution at present doing this work. Before it will be done a new kind of school of instruction will have to be organized and it will have to be of post-graduate character and grade. It is a comparatively simple matter to teach a man how to spray or prune a tree. It is a different proposition to teach him how each year to clear $5 or $10 from that tree, and like sums from 1,000 trees or 10,000 trees. This last is a business problem involving many operations, each one of which is attended with more or less uncertainty and considerable additional expense.

There are administrative features, therefore, to be considered in agriculture as well as scientific features. How to secure both of these in the person of a teacher who is to show how the profits of agriculture are to be insured is a question to be considered by those who undertake to equip men and women for extension work. The economics of agriculture are the prominent features in this new teaching and consequently must be equally prominent in the new school that is to equip the teacher. In some way the teacher must have worked out in actual experience the line of practice that he advocates and explains to others. He must have actual figures taken from personal experience that show outgo and income which he can present in support of his teaching and methods. He must prove up the things that he advocates, and he must be able to demonstrate them in the field, orchard, or stable as well. In short, he must *know* that the method he advises is practicable, and he must *know how* to carry it out in practice.

It is clear that no man much below middle life can have had the degree of success and the kind of practical experience that is needed in an ideal instructor in extension work. If with this experience he has had good preliminary education, he can safely be sent out to represent the institution in extension work. If he has not had this preliminary education to a degree sufficient to enable him to present his method and the scientific reasons for the processes in an intelligent way, he will need some training in a school of economics to widen his view and enable him to understand why some of the things which he has learned by experience are so.

Until something better is devised a school of agricultural economics should be established by each agricultural college. Examination for entrance should require evidence that the applicant has made a success in some line of agriculture; that he has a fair English education; that he is truthful and well behaved; that he is of temperate habits, and in good physical health. The school should be a school of specialties, as stock breeding, poultry rearing, dairying, and fruit growing.

To procure students search should be made for men and women who are succeeding, or have succeeded, in some line of agriculture, and inducement be offered to them to engage in extension work.

Before entering upon their duties the new instructors should all be required to attend the school of agricultural economics and to pass examination in the lines of work that they are to take up. Their final engagement as extension teachers should not be made until after a six months' probationary period and active duty in the field, in which the prospective instructor must have demonstrated to the satisfaction of the extension director that he is qualified to represent the department in an efficient and otherwise acceptable way.

Graduates of the college desiring to enter upon extension teaching as a profession should be required to spend at least three years in conducting farm operations in the line of their intended branch of teaching, and show from diaries and records in books of account that they have not only performed the operations required, but that their efforts have been attended with financial success.

Employment in extension work should be by the year, and the remuneration should be fully equal to that paid the best teachers and experimenters in the other departments of college and station work.

FOREIGN COUNTRIES.

The status of agricultural extension in foreign countries can only be treated in this presentation in a rather general way for lack of time to discuss the work of each country by itself. In most continental countries and in Great Britain and Ireland extension work has been in operation for many years, having passed through a series of experimental stages until a quite satisfactory system has been developed and adopted which is substantially uniform, at least in its more important features, throughout all these countries.

State control or supervision and state aid by means of grants to local societies and by furnishing expert assistants to give instruction and direct the work are features in every country. Local organization and local contributions to the partial support of extension work are also found in all countries where extension has become a permanent feature in agricultural development. In some countries a corps of expert advisers is located permanently in each county, whose members devote themselves to improving agriculture in that district. In other countries winter schools of agriculture for adults are established in all communities; usually the winter schools are for men and summer schools of domestic science and household economy are established for women. The teachers in these schools give instruction in the winter and are peripatetic advisers to farmers during the summer. Night schools of agriculture have been established in several countries for young men and boys, and are in reality continuation schools for those who have passed the public-school examinations and desire to pursue their studies beyond the grade that those schools represent. In these continuation schools agricultural and domestic-science studies are added to the academic branches, and practical courses are also made a part of the curriculum.

In almost all countries the peripatetic instructor is subjected to careful examination by experts before he is commissioned to engage in extension work. The instruction must be consistent, and that which is to be imparted is selected with a view to the needs of the localities in which the instructor is to teach. The examinations are usually both oral and written. accompanied with tests in practice to discover the applicant's knowledge and skill in the actual operations of the farm.

State supervision in some countries is exercised by two departments, the department of education and the department of agriculture in cooperation, and the instruction extends into the normal schools for teachers and into the rural public schools. Under this union of two departments both education and practical agriculture are brought into harmonious working, resulting in the healthy growth of both.

A great deal is made in foreign countries of exhibits of agricultural products in which competitions are the chief factor, with prizes of considerable value for superiority. These competitions extend to crops growing in the fields as well as to seeds, grains, and grasses shown at the fair. Special prizes are awarded for animals of high grade kept for breeding purposes, with the result that certain districts have secured world-wide reputation for excellence in certain breeds, and buyers go from all countries to purchase the prize winners at these fairs.

Domestic science and household economy and art occupy a prominent place in extension work abroad. In Belgium this instruction is given mainly through the media of women's societies, of which there were in 1909 sixty-five with a membership of 6,162 and with a total attendance that year of 12,447. These societies held 212 meetings in 1909 at which instruction was given in subjects in the line of women's work and lectures and discussions upon sanitation, sociological and economic questions which affect country people, especially in their domestic life.

Cooking schools, sewing and fitting schools, art schools, schools of dairy instruction, and other special schools for women and girls abound. The best thought in these countries is given to the development of rural industries; how best to secure their development in the highest degree is the study of the entire people, city and country alike.

Large grants by the governments are made in aid of agricultural development. In Ireland, one of the least of the countries abroad, $152,355.24 was expended for itinerant instruction in 1904; $53,786.62 of this was derived from local sources and $98,568.62 from government grants. Similar large amounts are annually expended throughout the Continent in aid of teaching agriculture and domestic economy along extension lines.

The justification of these expenditures is found in the practical results that these countries have obtained by means of their extension work. The case of Denmark is typical of others, and is given as an example of a country whose commercial importance lies almost wholly in her agriculture. In 1860 the British vice-consul at Copenhagen reported that "Butter, or what is sold under that name, is execrably bad." At present Danish butter, Danish bacon, and Danish eggs stand in price and quality at the top in the English markets.

This country is a conspicuous example of what education of the country people can do for the development of the nation. Mr. Gill, secretary of the department of agriculture for Ireland, after a careful inspection of Danish methods, said that "what may be termed the essentials of agricultural progress are illustrated there, namely: (1) Highly trained intelligence, enterprise, and resourcefulness; (2) the power given to the farmers by organization; and (3) the effectiveness with which the Government is able, chiefly through these organizations among farmers, to aid them with expert advice, technical instruction, and material support."

There were 21 agricultural and horticultural schools in the country in 1905, with an attendance of about 4,000 scholars. There were 4 experiment farms with over 500 demonstration fields distributed over the country for testing varieties of grass and forage crops, determining the value of manures, best methods of soil improvements, etc.; 78 people's high schools with 6,000 students; 3,556 coöperative agricultural societies with a membership of 509,424; horse-breeding societies, cattle-breeding societies, swine-breeding societies, milk-control unions, egg-collecting societies, societies for the purchase of feeding stuffs and manures, cooperative abattoirs, loan societies or credit banks—all on the cooperative plan. There were in addition 107 local agricultural societies with a membership of 64,800. The State aids most of these organizations. The amount averaged $450 to each local agricultural society in 1903. Subsidies given are, however, only in aid, and to be available must be supplemented by private subscriptions by the membership.

In 1905 Denmark produced an average of 40.3 bushels of wheat per acre, 32.2 bushels of barley, 30.9 bushels of oats, and 28.5 bushels of rye, besides dairy products, eggs, and bacon in value per acre and per capita of population beyond that of any other country in the world.

What is true of Denmark in increasing production in recent years through the dissemination of agricultural information is measurably true of every other country in Europe, as the following averages in these countries conclusively show. The averages are with two or three exceptions taken from the report of these countries for 1905 and 1906, in each case the latest data that were accessible. The figures for the United States given in comparison are from the Yearbook of the Department of Agriculture for 1908.

The average production of wheat per acre in eighteen foreign countries representing 123,318,300 acres was 24.1 bushels; the average for the United States in 1908 over 47,557,000 acres was 14 bushels; the average for corn in nine foreign countries for 26,005,800 acres was 22.7 bushels; the average for the United States in 1908 over 101,788,000 acres was 26.2 bushels. The average per acre of rye in seventeen foreign countries over 102,584,400 acres was 21.9 bushels; the average for the United States over 1,948,000 acres was 16.4 bushels. The average for oats in eighteen foreign countries over 81,934,900 acres was 35.9 bushels; the average for the United States over 32,344,000 acres was 25 bushels. The average for barley in eighteen foreign countries over 44,989,400 acres was 28.7 bushels; the average in the United States over 6,646,000 acres was 25.1 bushels. The average for buckwheat in seven foreign countries over 7,551,400 acres was 15.8 bushels; the average for the United States over 803,000 acres was 19.8 bushels. The average production of spelt in five foreign countries over 2,150,571 acres was 33.1 bushels; the average in four foreign countries for millet over 7,254,000 acres was 19.2 bushels. The average in seven foreign countries for maslin over 1,303,700 acres was 27.9 bushels.

With respect to the areas covered and the product per acre foreign production, with the exception of Indian corn, greatly exceeds that of similar crops in the United States, and if some of the less progressive countries, as Spain and Russia, were eliminated, the average per acre for the remaining areas would be greatly increased, and if particular countries, as Belgium, Denmark, Germany, Great Britain, the Netherlands, and Ireland, were taken, the average would be still further increased. Wherever agricultural information has been most thoroughly disseminated there agricultural production has profited, and where this has been withheld or imperfectly disseminated the results are seen in the low average per acre of the leading crops in those countries.

No more interesting or significant feature is brought out in the study of the agriculture of foreign lands than the fact that in every country all of the people, peasantry, the landed proprietors, as well as those who administer the laws, now look to their agricultural educational institutions not only for the solution of present problems in production, but also for the discovery of new facts and new methods that will insure increased and more profitable crops in time to come. Accordingly, universities, colleges, normal schools, academies, secondary schools, common schools, and numerous special classes are everywhere in operation and in almost all of them the giving of instruction in agriculture is made obligatory. The governments also encourage the formation of local agricultural organizations, such as cooperative associations for special purposes, societies for holding agricultural shows, credit societies, agricultural insurance companies, etc., and in most cases grant them financial aid.

CONCLUSION.

In conclusion let me say: If fitting a man for providing adequate support for a single family has heretofore been thought to require special training and years of study, how much more thorough and extended must the training and study be that is to equip him for providing for the physical necessities of a nation or many nations whose people are all dependent upon the intelligent treatment of the plants, animals, and soils for daily bread? No more serious purpose has ever been set before the men of any age than this that ought to occupy the minds of students of agricultural science in the United States just now, that of discovering means of providing food, raiment, and shelter for the coming millions that this continent must soon sustain, for deliverance of these millions from the physical and moral ills that ignorance and disregard of sanitary and other laws are sure to bring.

As has been intimated, the aim in extension is not to make scholars in the school sense, but to increase the number of effective industrial workers and capable citizens and do this in the shortest possible time and in the most economical way.

By means of the extension movement the State is endeavoring to provide for the support and perpetuity of its own life. The teaching consequently should be confined to subjects relating to this end, and inasmuch as the period of instruction is necessarily short, selection must be made of topics that bear most directly upon the practical side of agriculture and domestic science. As the courses meet the practical and immediate needs of men and women in these industries they will commend themselves, and as they fall short in this respect they will lose their value.

Agricultural extension, therefore, is not the carrying of class-room work of the college or the research work of the station out to rural people except in so far as the class-room studies and the research work bear directly and in some vital way upon some phase of domestic science or agricultural practice and is capable of being applied in economizing labor or increasing production. It is a wholly new form of collegiate instruction partaking of the nature of post-graduate work adapted to men and women of mature minds with their scholastic education, such as it is, practically completed and the business of earning a livelihood immediately upon them.

This is the situation that at the outset confronts the agricultural colleges in undertaking this new education and for which they must prepare themselves with men, suitable material, courses of instruction, methods of demonstration, and money.

There is probably no higher call for service to the country than this. Many of your number are possibly just now looking out over life's great field for some piece of unpreempted ground upon which to lay your claim. If you are willing to become pioneers and clear the way for others, if you wish to "help your neighbor and exalt yourself," locate right here, and then bring to the cultivation of this most hopeful soil all the enthusiasm, patience, energy, and skill with which college training, patriotic fervor, and natural ability have equipped you, and whether you live to see the full realization of all your hopes or not, you will at least have the consciousness of having "fought" *in* "a good fight" and have the satisfaction of having attempted something for the well-being of the race, which to many men is of itself a sufficient and to all is an imperishable reward.

THE SPHERE OF AGRICULTURAL EXTENSION.

By Dean HOMER C. PRICE, *Ohio State University.*

In 1906, at the annual meeting of the American Association of Agricultural Colleges and Experiment Stations, Prof. W. A. Henry presented an address entitled "A plea for a new division of agricultural college and station workers." In the course of that address he made the following statement: "Our agricultural colleges have been growing along the line of least resistance and grasping the greatest present opportunities. Gradually the farmers have come to use the college and its workers, who have found that they can often do the most telling work for the time being by deserting their laboratories and study rooms, and even their classes, and going out to their clients. These distractions are, after all, the very best evidence possible of our success. As a remedy for the present unsatisfactory situation I suggest that there be organized in every college and station a separate corps of workers whose sole duty shall be to serve as intermediaries between the college and station on the one hand and our great farm clientage on the other. They will relieve the investigators and teachers of a large portion of their present extra college and station duties. High-grade research and the best quality of class-room instruction will then, and only then, be possible. With this corps of specially trained middlemen our colleges and stations will serve the farmer far better than is now possible. To my mind there is no better way to relieve the present strained conditions and at the same time help our farmer clients as we should help them in their ever-increasing demands upon us."

At the annual meeting of this same association held at Portland last year the relative importance of extension work was recognized by changing its constitution and creating a section for agricultural extension workers of the same rank as the sections on college work and experiment-station work, and thus making three sections, instead of two, in the association.

SPHERE OF THE WORK.

Agricultural extension work is no longer a theory; it is a fact. Fifteen of the States are now making specific appropriations for conducting it, and it is eminently fitting that at this time we should hold a conference for considering the many phases and problems that arise in connection with it and to plan for the future development of the work. I have been assigned the "Sphere of agricultural extension" as my subject, and while I realize that agricultural extension is to a considerable degree a local question and should be dealt with from a local standpoint, I believe that, in a general way, we all have the same problems to meet, and the ultimate end sought in all of our agricultural extension work will be absolutely identical, namely, the betterment of country life.

The sphere of agricultural extension work, to my mind, is any and all forms of educational activities carried on away from the college, but under its direction and supervision. The short-course work that is carried on at the college is regarded by many as extension work. This is true, inasmuch as it is not work of academic grade, but it is local work that is done at the college, and largely by the regularly employed teaching staff of the college. This is due to two causes: First, the season at which the work is given is the very busiest for the extension worker in the field; and, in the second place, the students come for the purpose of being instructed by the regular teaching staff of the college, and will be satisfied with nothing else. While I readily recognize that these short courses are almost purely informational and inspirational, and theoretically should be classed as extension work, yet, under the existing conditions in the colleges, I do not see how it can be done without hindering the extension department in doing other work that it should be doing at the same season.

Agricultural extension work may be classified under three heads: (1) The giving of information to the farmer of a specific nature that he may apply to his own particular problems. (2) The giving of demonstrations to show how to apply the information that has been furnished. Farmers are not different from any other class of men in that they want to be shown. "Seeing is believing," and, although they may have all the information necessary at hand, they want to see it applied. (3) The establishing of ideals or the giving of inspiration. This, I believe, is the most important sphere of extension work and the one that should always be kept prominently in the mind of the extension worker.

FARMERS' INSTITUTES.

The first form of extension work established and the one that has been extensively developed has been farmers' institutes. These have been organized and conducted in various ways in the different States. Their effectiveness has also greatly varied. In some instances they could scarcely be classified as giving information, demonstration, or inspiration, but rather as affording recreation and entertainment. Under the ideal organization farmers' institutes will be an integral part of the agricultural college and will be conducted through the agricultural extension department. The greatest complaint against farmers' institutes has been that the speakers have not advanced as rapidly as the audiences. They are in the position of the German farmer who became mired with an empty wagon. A friend came up to him, and the German excitedly urged his horse to pull him out, but with no avail. Then, stopping, he bewailed his friend, "This is the worse stick I ever was stuck." "Why, Jake, you have been stuck many times, and I don't see that this is any worse than before." "Yes, dat is so; but don't you see! I am stuck with an empty wagon and have nothing to unload." I fear that audiences sometimes feel that the institute speaker is in the same predicament.

EXTENSION SCHOOLS.

An outgrowth or a development of the farmers' institutes has been the extension school, or moving school. Corps of teachers from the extension department establish at some central point a school of one or two weeks in length, and by lectures and demonstrations teach some of the fundamental facts applicable to the agriculture of the immediate vicinity. In Ohio the legislature has provided that the extension department of the college of agriculture shall hold schools of not over one week in length and not more than one in each county of the State during a year. Last year 34 of such schools were held for men and 30 for women, with an aggregate attendance of 5,000 and an average attendance of 145. For next year applications have been received and granted for schools from 75 counties out of the 88 in the State.

In other States larger districts have been taken as the units in which schools should be held, and the enrollment in the schools has been much larger than in the Ohio plan. Extension schools are new and are in the high tide of popularity just at present owing to their novelty. The permanency of these schools for the next ten or fifteen years will depend upon the thoroughness of the work done in them and upon how much real benefit they prove to be to the farmers who attend them. If they are to be schools in reality as well as in name, they must instruct, and the men who conduct them must be men who can teach a few things clearly, plainly, and definitely.

CORRESPONDENCE AND READING COURSE.

Extension work by systematic correspondence or reading courses has been carried on in many of the States. It has the advantage of reaching the man on the farm who can not leave his work even to attend an extension school. The value of the work done in this way depends upon the individual. There is very little inspiration about a correspondence course except what the student brings to it. The enthusiasm of numbers is lacking and the benefits of personal acquaintance with the instructor are lost. Nevertheless this means does offer a way of reaching every farmer in the State and will be a method that will be increasingly employed by the extension department.

AGRICULTURAL TRAINS.

One of the most spectacular and novel methods that has been employed has been the operation of special trains run in cooperation with the railroads, carrying lecturers and exhibits and stopping at the different stations along the line and spending from thirty minutes to half a day in giving lectures and demonstrations. Such trains have been operated in most of the States and the railroads recognize the benefits of them. To the agricultural college and extension department these trains have been a great advertising medium. They have reached people that could not have been reached in any other way. They have made known the work of the college throughout the State and in circles where it was unknown before. It has proven an active agency for popularizing the work of the extension department, and the cooperation of the railroads has emphasized the economic importance of the work of the agricultural college.

DEMONSTRATIONS.

There are some things that can be effectively taught only by demonstration. Take such operations as the home mixing of fertilizers, the preparation of spraying mixtures, or the pruning of trees. An actual demonstration will impress the truths in such a way as the lecturer unassisted can not do.

A demonstration is the most effective answer to the criticism that it is "all right in theory but you can't put it into practice." The extension worker has an opportunity, by holding field meetings and giving public demonstrations, of driving home his truths and proving that his recommendations can be put into practice and that they will give results. The field for demonstration is almost unlimited and affords the extension workers an opportunity to familiarize themselves with the actual conditions in different sections and furnishes employment for the force during the busy season on the farm when the holding of any large or prolonged meetings of farmers is out of the question.

DEMONSTRATION FARMS.

Another phase of this demonstration work is the demonstration farm. One of the most urgent questions before the American farmer at the present time is the reorganization of his system of farming. He treads the beaten path of custom and is ultraconservative in making changes. The demonstration farm is one that demonstrates in a practical way modern methods and systems of farming and shows results. It is needless to say it must be profitable, it must be more profitable than the systems of farming generally practiced. How these farms are managed and operated is a problem for the extension department to solve. It probably can best be done by cooperation with farmers who will put their farms at the disposal of the extension department and will carry out the plans specified for its management. Field meetings can be held at such farms at seasons when the work of the farm can best be seen. Practices in farming spread largely by example. Take the silo and its spread in the corn belt as an illustration. A progressive farmer in a neighborhood builds a silo. His neighbors watch with much misgivings and predictions of failure. He succeeds well with it, his stock look better in the spring than usual, he seems to have abundance of feed, and in short it seems to be a good thing, and in a year or two others begin to build. To accelerate this slow and gradual transition that is taking place in our system of farming the demonstration farm is useful. But it must be a farm that really demonstrates something that is worth while.

COOPERATION WITH LOCAL ORGANIZATIONS.

This includes the relation of the extension department with organizations that have been formed for the improvement of farm products such as corn-improvement associations, cow-testing associations, community breeding organizations, and similar activities. The sphere of the extension department is that of a promoter and organizer to get these local movements started. After they are once established then the extension department should withdraw except as a counselor and referee. When tests are conducted a representative of the extension department may serve as an official so as to give the test standing of an official character. Any difference that may arise may be referred to the extension department for an impartial and unbiased decision of the same.

This all tends to center the agricultural interests in the college, not to paternalize the farmers but to build up the local interests and create a spirit of commercial independence and at the same time to emphasize the importance of education along agricultural lines. The extension department serves as a guiding hand to shape the purposes, methods, and policies of such organization; but its sphere is to develop rather than to take on an accumulating load of responsibility in their management. Put them on their feet and then turn them out to build up strong organizations rather than to retain the care and supervision of them.

AGRICULTURAL SURVEYS.

We are familiar with the reports of geological, biological, and topographical surveys. But as yet nothing has been done on any large scale to give us definite information of our agriculture. Surveys have been made of special crops, as orchard surveys; the Bureau of Soils of the U. S. Department of Agriculture has made soil surveys of different sections, and for limited sections complete surveys have been made under the direction of agricultural colleges. The time has come when we need to know just what the status of our agriculture is in every State, to know the character of the soil, the character of improvements, the systems of farming followed, the class of farmers and the conditions of the schools and churches. This information is fundamental to an intelligent development and adaptation of the work of the extension department, and it is information that should be collected through the extension department. The student that comes to the college must adapt himself to the instruction of the college and apply its teachings to his own local conditions. But the extension teacher that goes to the farmer must adapt his teaching to the community in which he is instructing, and to do this he must know local conditions. The success of extension work will depend upon how much it teaches that the farmer can put into practice on his own farm. Take, for example, the question of dairy barns. What the farmer wants to know is how he can remodel his present barn and make it more sanitary and better adapted to keeping cows, not how to build an elaborate expensive new barn that he can not afford and his business would not justify. In fruit growing the first thing the farmer wants to know is how can he renovate the orchard that he now has so as to make it profitable and then he will be interested in planting new orchards. Last year in Ohio a farmer with a Rome Beauty apple orchard 20 years old was negotiating for the sale of the trees for the lumber that the trunks of them would yield, as the orchard had given practically no returns and was proving an incumbrance to the ground. A representative of the experiment station visited the orchard and found that it promised a heavy bloom and arranged to spray 1 acre of it to show what could be done by thorough spraying. As a result the apples from the 1 acre netted the owner, after paying all expenses, $475. It is needless to say what the effect was on the owner. He planted a large orchard this spring and has no more thought of cutting down his old one. The orchardists for miles around heard of the results and came to see the orchard. It gave a new impetus to fruit growing in that section and did more to interest the farmers in spraying than all the bulletins that the college or station could publish.

Surveys can not be compiled in a year, but they will be cumulative, and the extension department should serve as the repository in which the information as collected should be filed.

IMPROVING COUNTRY LIFE.

Thus far we have considered methods of extension work that are concerned primarily in increasing the production of the individual farmer, and this is true of practically all forms of our agricultural education. We have concerned ourselves principally in teaching how to make " two blades of grass grow instead of one," as if that were the end sought instead of the means to the end. I concede that it is fundamental and absolutely necessary, but it is not enough, and in our extension work, as well as our college work, we must emphasize the fact that to increase our production is only for the purpose of improving ourselves as citizens and our community as a place in which to live. Farmers are now prosperous and accumulating wealth rapidly, and I believe are needing information on how to spend their money as much as how to make money. If the literally millions of dollars that are being spent by the farmers of the Middle West for automobiles could be spent in improving the farm homes, in putting in modern water and sewerage systems, hot water or steam heating, gas or electric lighting systems, and in building comfortable and attractive tenant houses, farm conditions would be revolutionized. It is not because the farmer can not afford these things that he does without them, but because he does not know about them and how much they cost and how they can be installed. The farm home of to-day is entitled to and can have all of the conveniences of the city home.

What duty has the extension department in this matter, and what can it do to bring about these results? It seems to me that there is no question about the duty of the extension department in this matter, for it all tends toward the betterment of country life. The only question is as to methods that shall be used to bring it about.

THE RURAL SCHOOL.

The betterment of country life is entirely a matter of education, and it naturally begins in the rural schools. The movement toward introducing the study of agriculture in the curriculum of the rural schools has been brought about largely through the activities of the extension departments of agricultural colleges. It is generally conceded that our rural schools need to be redirected, that their influence in the past has been to minimize the opportunities offered for successful careers in the country and to emphasize the opportunities offered in the city. The need of the present is not so much for a special kind of education for the rural school as it is to apply that education to rural conditions. We do not want a system of education so specialized that it will unfit the boy for anything but the farm, but rather an education that will prepare him better for service either in the city or the country, and at the same time taught in the terms and the spirit of the country in such a way as to give him the right outlook toward the farm and country life.

The extension department can be instrumental in bringing this about by its contact with the schools, by the publication of bulletins, by having men in the extension department who are practical rural school men to study their problems, by holding conferences with teachers and boards of education, by assisting in arranging courses of study, and creating sentiment for improving the rural schools. And last, but not least, by taking a leading part in the enactment of legislation affecting the rural schools. The centralization of schools is a vital question in many sections at the present time. It is a legitimate sphere for the extension department to furnish information and facts concerning the success that centralization has met with in other places; to serve as an impartial informant whose reports will be accepted by all without question. The extension departments without any official relation to the rural schools is in position to play an important part in developing the rural school system and to take advanced ground on questions without fear or favor.

BUSINESS RELATIONS OF THE FARMER.

There are some problems in connection with the farmer's business relations that are as important as any of the problems with which he has to deal, and yet they are not problems that can be as readily dealt with by the extension department as those that have been mentioned. Nevertheless, they are no less important and ought to be considered. One of the problems is cooperation on the part of the farmers in producing, in buying, and in selling. Various forms of cooperation have been worked out; some have been signal successes and some of them just as signal failures. We are all familiar with the successful cooperation in the marketing of fruits as followed on the Pacific coast, where 80 per cent of the fruits produced are marketed in this way. In the Eastern and Central States the individual farmer has occupied such an independent position that cooperation has not appealed to him, or else he has gone into it prepared to receive all of its advantages but not prepared to meet any competition or suffer any losses, and as soon as these have come has dropped the matter as impracticable.

As our agriculture becomes older we will appreciate more the advantages that will come from cooperative effort and adopt it. In many of the European countries, and especially Denmark, cooperation has revolutionized agriculture and has brought prosperity instead of poverty. So far as the extension department is concerned, its interest in the question probably can only be advisory and to give information in regard to its success in other places. But it can serve very legitimately in this capacity and effectively too. Farmers will soon learn that the extension department has but one object in its work, namely, to promote their welfare, and will come to regard it with the highest degree of confidence. The extension worker can promote conservative, wise cooperation by word and pen and have a marked effect on its advancement.

Another feature of the farmer's business that needs to be developed, more especially for the young farmer who is just getting established, is a better system of credit. In the past the young man without capital who wanted land could go West and take up government land. but now the supply is practically exhausted, and the young man of to-day who wishes to own a farm must buy it, and it is most desirable for our agriculture that he shall become a landowner rather than a tenant. But how is he to do it? The smaller his resources the higher the rate of interest that he must pay. If he wants to save his money and put it at interest he will be able to get 2 per cent interest through our new postal savings bank and be absolutely sure of his deposits, or he may put it in a private savings bank and get 3 or 4 per cent interest on his deposits. If he wants to borrow money for the purchase of a farm, he may be able to borrow one-half or two-thirds of its value by giving a first mortgage and paying 6 per cent or more interest. The outlook is not bright for the young man without capital who looks forward to becoming a landowner. Under our present system of credit, character has no collateral value as security except in so far as some individual may accept it. The fact that a young man is industrious, temperate, and frugal is no asset in borrowing capital. In older countries credit associations have been established among farmers which amount virtually to a cooperative credit, and in which members accept unlimited liabilities for the debts of the association. As a result all members are interested in the prosperity of every other member. Loans are made to members in proportion to the wisdom in which they are being used. If a member becomes dissipated or negligent of his work, his loans are quickly called and his credit reduced. It thus serves as a stimulus to the prosperity of the individual members and to the community as a whole.

Under our own conditions we may not need the same kind of system that is used elsewhere, but we do need something, and will need it much worse in the future, as land becomes more valuable than it is now. It is a problem that will seriously affect the welfare of our rural life. It is a question that the extension department can legitimately be concerned in solving, although the capacity in which it shall serve is a problem to be worked out in the future.

HOME MAKERS.

Thus far I have spoken only of the work for farmers, and it would be inexcusable if I did not include the home makers in the sphere of extension work. At no place can work be done that will so vitally affect the comforts and pleasures of the country as in assisting the home makers, and at no place will it be more acceptable. Last year in Ohio we began holding extension schools with the expectation that we would probably hold 10 or 12 schools for home makers in connection with about 35 agricultural schools. At the end of the season we found that we had held 30 schools for home makers and 34 agricultural schools, and for next year, if there is any difference in the number that are held, it will be in favor of the home makers. The questions of the home affect all of us, and whether it is a question of the preparation of food, of the furnishing of the house, of the rearing of children, of the management of the household, it matters not. Any question that concerns the homes of the country is within the sphere of our extension work.

RURAL CITIZENSHIP.

If we are to make extension work useful in the highest degree in the betterment of country life, we must create a sentiment for ideal rural citizenship—not for the man with the largest farm or the biggest bank account or the most influence in political circles, but for the prosperous, well-to-do farmer who has built up his farm and will leave it better than he found it; for the man to whom his farm is his home, where he expects to live and die, and not to move into town to retire as soon as he is financially able to do so and leave his farm to transient tenants; for the man of culture and affairs who sees the problems of his community as well as the problems of his farm; for the man whose life is an inspiration to those with whom he comes in contact.

Such a citizenship insures the welfare of our agriculture, the prosperity of our farmers, and the food supply of our nation.

In conclusion let me repeat that the sphere of extension work includes every activity that has for its purpose the betterment of country life. That the means by which this is done may be the farmers' institute, the extension school, the correspondence school, the field demonstration, the agricultural train, the rural school, the rural church, the grange, the farmers' club, or what not, they are all means to an end. For the individual extension workers or for the extension department of any college or station, the local conditions will determine the means that will be used, and the degree to which the end is accomplished will measure the success of the work.

THE SPHERE OF AGRICULTURAL EXTENSION.

By President A. M. Soule, *Georgia State College of Agriculture.*

INTRODUCTION.

Economic questions have not been considered of fundamental importance in the United States until quite recently. Concrete illustrations bearing testimony to the accuracy of this deduction may be observed on every hand. For the greater part of a century, city building and industrialism have occupied public attention to the exclusion of other matters of equal gravity. The lack of a national policy with reference to the conservation of our natural resources and of the health and energies of the people has resulted in the peculiar neglect of those who live in the country and till the soil. Now, however, that the source from which to draw an abundant supply of raw material for industry is threatened, public attention has been focused on rural conditions as never before, and all interests are concerned in suggesting remedies for the improvement of country life and increasing the productive capacity of the farm worker. Just how this is to be accomplished is the vital problem of the hour. Innumerable plans and policies have been proposed, but of all the suggestions made as yet, none promise to be so efficient or bear fruit of equal value to that of a well-organized and directed system of agricultural extension.

SCOPE AND PURPOSE OF EXTENSION.

Extension teaching in agriculture is a comparatively new undertaking in the United States, and many definitions covering its sphere of service have been suggested. Which one will be ultimately accepted and which most nearly expresses the object and character of the work to be embraced under this head is not a matter of serious concern at this moment. In scope and purpose extension teaching in agriculture involves the reaching of all persons who are not resident students of a given institution. The subjects taught will naturally embrace all phases of agricultural knowledge, the word "agriculture" being used in its collective sense. Home making will also be included, as well as those topics which affect economic, social, and educational problems bearing on rural development. The colossal nature of this undertaking is evidenced by the fact that the more or less definite instruction of more than 42,000,000 people will be involved, and the varied information which those employed as teachers must command makes the work especially difficult of organization and prosecution.

To really demonstrate the value of science on the farm, and thus inspire and conserve the energies of those who live in the country, is a part of the mission of extension teaching, because when this is accomplished depression will give way to optimism, which is always a prerequisite to success in any line of endeavor. Since the work is still in its empirical stages, it is impossible to accurately define its sphere or to offer more than mere suggestions as to the policies to be pursued. The personal experiences of our oldest workers in this field are comparatively limited, and an attempt to offer specific advice would be inappropriate under the circumstances. It is clear to my mind, however, that the short courses held in connection with most of our colleges should not be considered within the province of extension teaching, but should remain under the direct control of the colleges of agriculture. If the courses offered at present are so elementary as to bring criticism on the college, they should be amplified until they may be regarded as a proper part of its work.

DEMONSTRATING THE VALUE OF EXTENSION TEACHING.

It is evident from what has already been accomplished that the feasibility of reinvigorating farm life through extension teaching has been established. Some gratifying results have already been secured in Georgia, and that there is a distinct need for work of this character all agree who have familiarized themselves with the economic conditions prevailing on our farms. An illustration bearing on this point may not be out of place at this time. On the demonstration field of the State College of Agriculture last year 2,680 pounds of seed cotton, yielding 43 per cent of lint, or a total of 1,152 pounds of lint to the acre, were produced. Two tons of barnyard manure and 580 pounds of a 3–10–4 fertilizer were applied in the drill rows under this cotton. The total cost of the fertilizer was $9.50 per acre. The cost of growing this crop, including some extra labor on account of its being an experiment, was $32 per acre. The cotton sold for 15 cents a pound, or $172.80, and the seed was worth at least $20, making the total value of the crop $192.80, or a net value per acre of $160.80. What is land such as this worth? It will pay 10 per cent on $1,600, or 160 per cent on land valued at $100 per acre, or 640 per cent on land valued at $25 per acre. But you will say this is the exception and not the rule. There are millions of acres of land in the South which, adequately handled, may be made to duplicate these figures. In the experiment noted, 41 pounds of nitrogen, 72 pounds of phosphoric acid, and 47 pounds of available potash were applied to an acre of land. Contrast this for one moment with 4 pounds of nitrogen, 16 pounds of phosphoric acid, and 4 pounds of potash, which are so commonly used. Land thus fertilized is now frequently yielding not more than 200 pounds of lint cotton and 400 pounds of seed per acre. At current market prices this represents a gross return to the owner of $36 per acre. The cost of cultivating and handling this meager crop, as compared with the large crop recorded above, differs chiefly in the cost of the fertilizer used. In other words, cultivating and harvesting an indifferent crop of cotton will not be far from $25 per acre. This will leave a net profit of $11 to the owner of the land, or 11 per cent on $100. Surely, there is food for thought in this difference in return per acre.

Facts of this character are easily assimilated by the farmers, and when called to their attention through the agency of the itinerant schools held last winter were put into practice on hundreds of farms this season with most gratifying results. The essential character of extension teaching when projected along right lines is amply exemplified by this citation, because it has enabled the college, first, to get into proper relation with its constituency, and, second, has effectually overcome the farmers' opposition or indifference toward scientific methods. Surely it provides a sufficiently convincing answer to those who look askance upon the practicability of the greatest new movement in educational circles in the United States in the last quarter of a century.

The few who oppose this movement base their objection chiefly on the supposed failure of the agricultural colleges to accomplish the mission for which they were designed. Personally I think the colleges have achieved a marvelous success in the face of much unjust criticism. A digression therefore to consider this point for a moment may not be inappropriate, since the reasons for the frequent inability of the agricultural college to get in proper touch with its constituency are now generally appreciated by those who have investigated the situation. This failure in years gone by was due to a lack of contact between the institution and the people it was expected to serve, and may possibly have been aggravated in some instances by the tendency of the college to place its teaching on a basis, as some thought, beyond the conception of the layman, and to neglect to enforce the value of its work by simple though concrete experiments. It should not be forgotten, however, that the colleges had to maintain some ideals, the wisdom of which has now been fully established, since it has resulted in lifting the plane of agricultural instruction up to a reputable standard and not dragging the institutions down to the level of the strictly mediocre, and thus forever stultifying their usefulness. The same influences have been chiefly responsible for the failure to make progress in introducing agriculture into the common and secondary schools. Nearly everyone who has undertaken the work proceeded on the theory that it must be made at least semiscientific, and thus so complicated and difficult of placing in the curriculum as to foredoom it to failure at the very inception of the movement. It is now realized by experienced educators that while agriculture should have a definite place in the schedule of the secondary school, it can often be taught to advantage in the common school as an incidental feature of the courses in arithmetic, geography, and nature study and still furnish the children with a surprising amount of fundamental knowledge concerning the principles of modern agricultural practice. The mere use of a properly constructed corn-germinating box will eventually work a revolution in the methods of growing this cereal in any community. Much progress is being made and we may face the future with confidence.

PLAN OF ORGANIZATION.

The extension movement to be successful will call for the administration of the work as a separate and coordinate department of the college. Its sphere will be to take over the cursory and sometimes ill-advised work which has been done in the past through sporadic efforts on the part of the colleges and stations and give it definiteness and constructive value in the education of the farmer. Extension work must not be regarded as a species of advertising or as a sort of educational propaganda, but as a real factor in the business of education, a system of instruction in fact which is to be modified, reorganized, and developed until it proves an effectual medium for disseminating knowledge, correlating and concentrating the effort of the farmer along certain lines, and bringing him to a proper appreciation of the relationship of intelligent effort to success in a given environment. Extension teaching can and should be the means of awakening an interest in conservation and the economic and social problems which lie at the basis of any movement which proposes to rejuvenate country life.

That work of this character will be expensive all realize who have studied the comprehensive nature of the problems involved. That it will pay an unprecedented dividend all agree who have witnessed the benefits which have followed the inauguration of work along similar lines in Denmark and Belgium and other European countries. There is a distinct tendency to desert the farms in the United States and crowd into the cities, which has threatened the continuity of production on a basis commensurate with national needs. In many of the countries of Europe 65 to 75 per cent of the people still live on the land, and they are able in Holland and many other countries, for instance, to grow twice as much wheat per acre as we obtain from a comparatively virgin soil. This is not due to the inherent initiative of the peasantry of Europe, but to the fact that they have been systematically schooled and their efficiency increased through a system of elaborate and carefully executed extension teaching. While the methods employed in Europe will no doubt need to be modified and the work projected along lines to meet the peculiar needs of our people, there is no reason to longer doubt the success which will follow in the wake of extension work properly directed.

A STATE AND NATIONAL PROBLEM.

Extension teaching is both a state and a national problem, since through its agency a solution may be found for many distressing economic situations. Think for a moment of the frightful inroads which the cattle tick makes on the live-stock industry of the South, amounting to an annual loss variously estimated at from fifty to one hundred million dollars. When there was an abundant free range in the West it made little difference to the average consumer whether the South turned its attention to animal industries or not; but now that the population and the cost of living are increasing, together with a constant diminution of the free range, the matter becomes one of serious concern, and it is imperative that each section of the country raise the live stock needed at home to insure the permanent maintenance of soil fertility and an adequate supply of animal products for the country at large. It has been known for some years that the cattle tick could be successfully eradicated through a rotation of pastures at a moderate cost and in a short period of time, and while the work has made great progress, comparatively speaking, "the Rubicon still remains uncrossed." Ask those who are already engaged in the work what the greatest immediate need is and they will unhesitatingly answer, "The education of the people." It will be a comparatively simple matter when funds are provided through state and national appropriations to institute a campaign through extension schools which will result in the eradication of the cattle tick in any southern State in a surprisingly short period of time. Thus it will be possible through extension teaching to educate the people so as to make their effort constructive and to eliminate the unfortunate practices which have been permitted to grow up and flourish until they have become aggravated abuses and a stigma on modern civilization.

It is certain that more than $50,000,000 worth of cotton-seed oil is annually returned to the land. Thousands of people are thus deprived of one of the best sources of nutrition, because many farmers still persist in using the seed for fertilizer under the mistaken notion that the oil contains valuable elements of plant food. Thus a great sum of money is withdrawn from the channels of commerce each year to no purpose because of the existence of a fallacious belief. It is estimated in some southern States where extension teaching has been pursued that from 10 to 20 per cent more of the cotton seed is now sold to the oil mills than was true less than three years ago. This is an evidence of how quickly it will be possible to convert and transform an unjustifiable waste into a source of immeasurable energy for the uplift of those who till the soil. Through extension teaching it will thus be possible to demonstrate the efficiency of agricultural education and research in solving the problems which confront the advance of civilization and to introduce agricultural training into all phases of the life activities of our people on a positive instead of a negative basis, as at present.

WORK WITH ADULT FARMERS.

Any competent discussion of the subject of extension teaching will necessitate its consideration under various subheads, of which the above is one of the most important. There are various ways in which benefit may be conferred upon the farmer through this system of instruction. Among the most important of these is the itinerant school. These will vary in length from one to two weeks, according to local conditions. The itinerant school is considered one of the most desirable phases of work with adult farmers, because it is possible to take up a subject of paramount importance to a community and discuss it with some continuity of purpose and thus place in a practical manner before the people of a given locality the more important scientific facts and principles involved. It is one of the most successful means for disarming the suspicion of the people, as it enables them to become acquainted with the instructors and find out that they are really men after all, with characteristics and attributes similar to their own. Through courses offered in proper sequence the vision of those attending is broadened and a stimulus and initiative developed along certain lines which will prove most beneficial. The method of organizing, conducting, and maintaining these schools will no doubt vary in the several States. In Georgia the local authorities must submit a petition signed by not less than fifty persons. They must also provide a suitable hall in which to hold the school and assist in advertising the same. The college sends the speakers, and up to this time has not insisted on the payment of a fee, but all attending the school are required to register. Though the work was only established in January, 1910, 14 schools were held, with an average attendance of 90, or a total attendance of 9,000 for the 100 sessions. These figures are secured from the record cards which each instructor is required to submit with his expense account. The demand for schools grows apace and the number held will be determined solely by the funds available for the work.

The itinerant school is important to the community because sufficient equipment may be carried to permit of what may be termed both laboratory and field demonstrations. For instance, in Georgia the mixing of fertilizers is fully illustrated in connection with a lecture on that subject. Clinics may be held in which the more common diseases of live stock and poultry may be diagnosed and treated. Pruning and spraying and dairy demonstrations may also be made features of the work of these schools, thus making it possible for the people to put into immediate practice with most beneficial results the truths presented. Thus, through the itinerant schools, the new theory and practice of agriculture may be successfully established in the hearts and affections of those who till the land and constitute the principal bulwark of our national prosperity.

SPECIAL MEETINGS.

Next in importance to the itinerant schools will come series of special meetings arranged in various sections of the State for the benefit of its citizens. These may be conducted on the order of the farmers' institute meetings now so generally appreciated, and might include picnics and "rallies" of one kind and another where questions of public importance may be discussed. These meetings will be more or less temporary in nature and should be arranged so that at least one speaker could be sent from the extension department to discuss, for instance, the best methods of controlling the ravages of such insects as the codling moth, the chinch bug, and the boll weevil. It will also be possible to benefit the adult farmers materially by holding demonstrations on various farms throughout the State. These demonstrations should be more or less distinct from those offered in the itinerant schools, since the orchard, dairy, field, and garden would be used as the basis of the instruction offered, and specific questions asked and answered by the experiments conducted. The demonstrations might also include permanent work undertaken by the institution to illustrate, for instance, the best system of cropping, fertilization, or rotation for a given locality. The question of seed selection and the control and eradication of various diseases spread by spores or bacteria could also be shown most effectively through this medium. Traveling inspectors might also be employed with good advantage for certain purposes, as, for instance, in the eradication of the cattle tick, or in making it possible to manufacture a uniform grade of cheese or butter from the factories in a given district.

FARMERS' CLUBS.

The extension department can be made of material assistance in aiding in the development of farmers' clubs. These should not include in their membership more than six to twelve families, and may be developed into social units which will solve the rural life problem of isolation most effectually. They should meet from six to twelve times a year at the several homes when a regular programme including topics of social and economic importance to the farmer and his wife should be carried out. A representative of the extension department should visit each club once a year to address them and advise and suggest concerning the plans for the next year's work, including the preparation of the printed programme, and the best books and bulletins to be added to the library. Cow-testing associations, seed and live stock breeders' associations, cooperative fertilizer associations, truck institute societies, and various other organizations could be established through the agency of the extension department which would materially benefit the people of the community, broaden the horizon of their knowledge, and give a new direction to farm practice. We have had most encouraging results in establishing truck institute societies and other local cooperative clubs in Georgia.

Invaluable work might also be done in the distribution of improved seeds of corn and cotton and other farm crops. This seed should largely represent the improved strains developed through the activities of the research departments of the college, and should be distributed under certain prescribed rules with the idea of increasing prolificacy or providing immunity to the attack of certain diseases. In Georgia, for instance, excellent progress is being made in developing a strain of cotton resistant to anthracnose, which causes an annual loss to the State of fully twelve million dollars. In this connection, the great importance of distributing serum for the control of hog cholera and tuberculin for testing cows should not be overlooked.

WORK AT THE CENTRAL OFFICE.

In the central office at the college, correspondence and reading courses should be prepared. In less than three years over 25,000 names have been placed on our mailing list, and fully 20,000 letters are now answered each year, indicating the response which may be anticipated from an aroused constituency. Traveling libraries should be provided and sent out to all communities which are willing to comply with the rules and regulations governing the distribution of these books. There should also be a series of publications printed and distributed free of cost summarizing in a practical way the work of the several experiment stations and of the research departments of the agricultural colleges and other institutions as well. Plans and specifications for dwellings, barns, and other outbuildings may be prepared and distributed either free of cost or at such rate of remuneration as will pay for the necessary blueprints. By this means a better type of construction will be obtained and the enrichment of rural architecture insured.

Through these eight distinctive agencies the needs of the farmers in any State might be met with a fair degree of success and made to take the place of the desultory methods of practice which now so frequently are observed, and which account largely for the failure of agricultural science and the colleges of agriculture to make a proper impress on the minds of the people.

HOME ECONOMICS.

Any scheme of agricultural extension commensurate with the needs of the times must give consideration to the problems of the home and the home maker. The homes are the most important asset of the nation and the training afforded therein calculated to determine our efficiency as a people. It is currently stated that there are between 600,000 and 1,000,000 preventable deaths in the United States each year. The loss in this direction even on a purely mercenary basis is something enormous, leaving out of consideration the useless heartburnings and bereavements. It is quite as fundamental that efforts be made to disseminate knowledge which will benefit the home as the farm. To this end every active extension department should have a well-organized division to give attention to home economics and sanitation in all its phases.

In view of the fact that the mosquito is commonly accredited with being a carrier of malaria, and that typhoid fever is largely the result of the free entrance of the fly into our houses; that there is indescribable suffering due to improperly prepared food and a disregard of ethics with regard to the dietary. no other arguments in favor of this line of work seem necessary. It has been shown over and over again that the preparation of food is really after all a science, and not something to be acquired in an accidental way. It is clear that it will be much more difficult to provide a satisfactory dietary in the home in the future than it has been in the past because of increasing prices. Yet there are many things which may be made to give variety to the food supply which are not now utilized because of the limited knowledge of those who preside over some of our homes. Extension teaching may be made the means of correcting many of these defects and giving a new impulse and direction to domestic science and art, raising it above the mere drudgery of existence by which it is now characterized.

It will be possible through extension teaching to illustrate how the country home may be supplied with city facilities and those conveniences the lack of which is offered as one of the principal reasons why the country is abandoned for the city. It is a notorious fact that hygiene and sanitation are matters but little understood in both the town and the open country. The neglect of sanitation is a constant menace to public health and reduces the potentiality of our workers very considerably. Since the use of disinfectants and the proper disposal of household waste are comparatively simple matters, why not call this knowledge in a sufficiently graphic form to the attention of those who preside over our homes, and secure their active cooperation in destroying many insidious forms of bacteria which if left unmolested may presently menace the health of the family? Those who have investigated the subject claim that we have cause to be alarmed over the high percentage of infant mortality, due to the use of bad milk and improper nursing. The future of the nation is based on the virility of the rising generation. Surely it is worth while to give some attention to the care of those who will presently constitute our bulwark of defense and our greatest national asset. This may be done by a discussion of the principles of nursing at the hundreds of meetings for women which may be easily arranged for in any State and which will be liberally patronized when once it becomes apparent that matters of fundamental concern to mothers are being discussed and elaborated.

Through the medium of the extension department a greater interest in the common schools may be aroused on the part of both men and women, and the courses of these institutions so modified as to give them a new power in serving the community. No more important work can be undertaken so long as the school continues to provide all the education received by 90 to 95 per cent of our children. I have unlimited faith in the mothers, and once they are aroused to the deficiencies of our present schools a new order of things will be established. The Federation of Women's Clubs in Georgia is proving an aggressive factor in relation to the development of extension work for women and the reorganization of our common schools.

In addition to the above, the social life of the home should be considered, the possibilities of community living and entertainment explained, and the purposes which the school and church may be made to serve as centers of life and inspiration emphasized. The people in the country are perfectly willing to accept advice and suggestions along any line which will prove of an instructive and helpful character, if they believe it is honestly offered by those capable of leadership. Sympathy is the keynote to success in working with both men and women, and the workers in extension departments must possess a large vision and an abundant supply of the milk of human kindness. They must not confuse sympathy with an effort to dictate, dominate over or patronize the public, or failure will attend their efforts. Good workers in this field are like "the pearl of great price," exceedingly hard to find.

ITINERANT SCHOOLS OR INSTITUTES FOR TEACHERS.

A well-administered extension department will cooperate with the county school commissioners in holding institutes or traveling schools for teachers. These will parallel in a sense the extension schools for adult farmers. The problem of introducing agricultural instruction into the schools is one of national importance. It will not be possible to effect this end without placing certain information within the reach of the teachers and in a form which they can imitate successfully. Teaching is largely a matter of imitation, but the teachers have had no outlines to follow, so far as agriculture is concerned. The extension department promises to solve this riddle successfully, and to place both knowledge and methods within the reach of the teachers in a form which will result in the introduction of such instruction in agriculture as is desirable into both the common and secondary schools. When the teacher acquires the proper point of view there will be no more difficulty in offering instruction in agriculture than in nature study, because, after all, agriculture is really applied nature study, with the distinction that agriculture would probably consider a smaller number of topics. Where it is not possible to introduce agricultural instruction into the common schools the methods and information brought to the attention of the teachers through a system of institutes would at least enable them to make agriculture an incidental feature of the course, and this in some instances would be all that could be expected. Through these institutes what might be accomplished in the way of gardening in the common schools could be fully explained, as gardens could be established in some cases at the county sites and teachers brought there for a week's work at the most favorable season. That the commissioners and teachers will gladly avail themselves of the opportunities such institutes afford has been amply demonstrated in our own experience in Georgia, where we have held a large number of teachers' institutes and a number of extension schools with profit and success from the standpoint of both the community and the college.

ADDITIONAL WORK WITH SCHOOLS.

The extension department should certainly cooperate with the secondary schools in arranging and preparing for the courses of instruction in agriculture which should be offered therein. Assistance should be given in planning and developing the school garden and in carrying out the necessary laboratory courses to give the work definite value. At the present time comparatively few institutions of higher learning allow entrance credits or units in agriculture. This is not because it is agriculture, but on account of the unsatisfactory manner in which it is taught. A high-school course devoid of laboratory work does not deserve much, if any, recognition, yet the laboratory training may be easily provided in any moderately well equipped high school, provided there is some one to assist the teacher in arranging a suitable course. This is a matter of paramount importance, and is deserving of immediate attention. We are able in Georgia through the correlation of the work of the State College of Agriculture and the secondary agricultural schools in the 11 congressional districts to permit of a student's offering three units in agriculture for entrance to the university.

Attention should be given to the organization and distribution of school libraries of both a permanent and itinerant character. An interest should be taken in developing the social life of the school community and in the consolidation of schools in the country districts, so that instruction in the fundamental sciences and in agriculture might be made possible for the boys and domestic science and sewing for the girls. The extension department could well afford to provide a traveling inspector who would visit the schools and consult with the teachers. In fact, this is the only way in which progress can be assured. Traveling exhibits might also be prepared and left at each school for a week. These would indicate to the teacher and the children what they might hope to accomplish for themselves and would give a new incentive to the work. Illustrated lectures could also be given with advantage to both teachers and pupils, while teachers' conferences should be arranged, school fairs stimulated, and excursions planned to the college. Farm life and home circle clubs have been organized in some thirty counties in Georgia, and about 3,000 boys and girls enrolled as members. Competitive tests in growing corn and cotton and in raising live stock are being carried on with the boys, and cooking and sewing with the girls. Each county will have a school fair this fall, and the public interest in this work is shown by the fact that some $10.000 is offered as prizes. This work promises to be very helpful in the future and should be encouraged by the professor of school extension.

COOPERATION WITH FARMERS' ORGANIZATIONS.

The extension department should cooperate with all farmers' associations, giving them information and advice when requested, and assisting them in planning constructive work. Representatives should attend their various meeting as far as possible and assist in the formation of study and reading classes. All the societies of a given State, for instance. should be brought together in a round-up meeting at least once a year. This had best be held at the college and should last for a week. Through its agency the extension department can assist these various state organizations in promoting legislation favorable to the farmer and to education and research as well. It is appreciated by comparatively few that the first duty of the college is to give leadership, and of the experiment station to ascertain new truth of fundamental importance to all who till the soil. The farmers probably do not realize as generally as they should the importance of supporting and endowing these institutions liberally.

At the meetings of the various societies economic questions of paramount importance to a given community may be discussed, and methods of righting them along rational lines suggested. This is a very important matter, for it is undoubtedly true that many farmers' societies in the United States have proven impotent because of a misconception of their true mission and how to go about accomplishing the ends they had in view. In addition, cooperative tests and demonstrations might be carried on to advantage with members of many of these independent societies, while through conservative work on the part of the extension department they would be welded into a harmonious whole and made to work as a unit for the advancement of the individual interests of the society and of the farmers of the State. Among the societies which could be federated with advantage, for instance, are state agricultural, horticultural, stock and poultry breeders' associations, granges, farmers' unions, and county and state fair associations. At the present time all too frequently these various agencies are working independently and hence to little purpose in so far as securing material benefits to the farmers of the State is concerned. Their coordination into a comprehensive unit is one of the ways in which the extension work might be made to serve the interests of the farmers most advantageously.

RELATION OF EXTENSION WORK TO THE CITY.

The activities of the extension department should not be confined to the country, as there are many persons in towns and cities who own land, and there are many commercial and business organizations which should be brought under its influence and imbued with the importance of extension work. The city needs education quite as much as the country, and in a manner its citizens are quite as prejudiced as the farmer upon whom they frequently heap opprobrium. The ignorance of commercial bodies and of towns and cities of economic conditions in the country and of the best methods of righting them is frequently surprising and distressing, to say the least. Towns and cities often dominate legislation in spite of the fact that many of the representatives come from the country. They would often be willing through their representatives and through their organizations to enact laws which would be worth very much to the rural community, but they do not know what is needed or how to proceed to correct wrongs which they perceive exist. By meeting with the people of towns and cities and their commercial bodies a new direction to public thought may be given, many misconceptions corrected, and a harmony of action and spirit of good fellowship brought about, which is of the utmost importance to the continued prosperity of both producer and consumer. If this were done, the urban dweller would soon realize, as he does not now, that when the farmer is pursuing uneconomic methods and decreasing the fertility of his land, he must become an aggressive factor in righting these conditions as a matter of self-preservation. The urban dweller after all does not want to see "landlordism" develop in the United States, which will further tend to lessen the virility and independence of our people, minimize their earning capacity, and lessen their ambition to excel. The average urban resident is only beginning to suspect what will be the outcome of a policy which tends to concentrate lands in the hands of the few and make the great mass of our farmers tenants instead of landowners. He may be aroused to the perils of the situation and made to take an active part in preventing this the worst of all evils which can befall our country.

The urban dweller should be shown that a prosperous agricultural community means quite as much to him as the development of mere industries. For instance, in a given county in Georgia the yield of cotton through the aid of the city located near its center might shortly be increased to a bale per acre. The revenues of the city would be augmented $1,800,000 per annum by this movement, the purchasing power of the farmers and of the country surrounding the city almost doubled, while the revenue thus derived from the country through an improved system of practice would amount to more than five times the money paid out for labor and salaries by a million-dollar corporation located in this particular city. The urban dweller must be taught that it is his duty and privilege as a matter of self-preservation to divide with the man who lives in the country; that the city has had all the advantage in the past, and has been working to increase the cost of production, to depress life in the country, and to bring about the present condition of high prices. The urban dweller realizes that something is wrong. There is an opportunity to lead him and to direct his effort along lines that will redound to the mutual benefit of those who live in the town and those who live in the country. This is one of the greatest opportunities open to the activities of the extension department.

WORK WITH RAILROADS.

Extension work may also be carried on advantageously with the railroads and other large corporations. Railroad industrial departments may be made the channel for the distribution of vital information and for conducting cooperative tests and demonstrations throughout the territory traversed by their lines. These may be made on selected plats of land or through the operation of trains. In many instances the railroads are willing to lend monetary assistance to extension work. The railroads are interested in an efficient rural population, and it would not be a difficult matter to federate and unify their activities with great advantage to a well-defined extension policy. It is infinitely better to do this than to have them work independently and sometimes make the mistake of emphasizing factors of minor importance and disseminate information which is not always based on correct scientific deductions.

WORK WITH MISCELLANEOUS ASSOCIATIONS.

There is an opportunity to cooperate with various miscellaneous organizations to great advantage. In my own State, for instance, there is a Cotton Seed Crushers' Association, a Fertilizer Association, a Travelers' Protective Association, state bankers' and medical associations, several educational associations and college men's clubs. Lectures on economic topics and the discussion of problems vital to the interests of some of these societies can be made with mutual advantage. They will be well received, and if presented in the proper manner many of the suggestions will be acted upon favorably. All of these agencies may be banded together for the uplift of rural life, for the distribution of essential knowledge, and for the development of that spirit of harmony and good fellowship between industry and production which make for the permanent improvement of life in both the city and the country.

RELATION TO THE COLLEGE.

The work of an extension department will naturally be related very closely with that of the college of which it forms a part. While it is not my purpose to discuss the ideal relation of the workers in the extension and college departments, I believe it better that the specialists on the extension staff be attached to the corresponding departments in the college in order that there may be uniformity in teaching and a correlation of thought as it pertains to the research work of the institution. Where this relationship exists the extension workers will be a medium of communication between, for instance, the department of agricultural chemistry, with its fund of knowledge and variety of investigations in progress concerning soils and fertilizers, crops and animal nutrition, and the citizens of the Commonwealth. The extension workers attached to the department of agricultural chemistry can easily gather the samples, for instance, for the several analyses which will ultimately constitute a chemical survey of the soil types of the State. This becomes a matter of tremendous concern and importance in States, for instance, where millions of dollars are spent annually for commercial fertilizers, and it is but one instance of how the extension department may be made to serve the institution while the institution nurtures the extension department and enables it to distribute the best information throughout the State concerning given phases of farm work. By association with the department of agricultural economics, the extension workers can gather material for various social and economic surveys which will make possible a definite estimate of the conditions existing in rural districts and the remedies which should be applied for the correction of the same. Agricultural economics have been disregarded in an alarming manner in the United States, but the time has come to recognize the importance of this subject and establish a department in every agricultural college worthy of the name. It offers a most alluring field for investigation, and may be made the means of serving the Commonwealth and the nation in a manner not excelled in importance by that of any other department of instruction now in existence.

RELATION TO SOCIAL PROBLEMS.

Any extension department organized to efficiently serve a State will give much attention to the social conditions of the people it is designed to serve. One of the reasons why the country is deserted to-day is because of the unsatisfactory social life; the isolation which exists in spite of the telephone, good roads, rural delivery, and other agencies which insure rapid communication. At least this is the reason given for the movement cityward. Probably there is a misconception as to the cost of living in the city and some of the advantages which it has to offer for the translocation from the open free life of the country to the restricted and prescribed life of the town. Most people do not seem to realize that while living in the city has its advantages it is a costly proposition. One man with whom I am acquainted pays nearly $200 taxes on a small lot in the city. He might own a large farm in the country and pay less for the privilege. A neighbor moves into town to educate his children, because the school in his community is not satisfactory. He overlooks the fact that he could have afforded to give $50 or $75 outright each year to assist in maintaining a good school and have had all the advantages for his children which country life affords at a decided saving in cost. He could then have remained on his land and kept it in good condition, lived an independent life, and left a patrimony to posterity worthy of remembrance. Has life anything better to offer?

The tendency to hark back to the culture of the Greeks and their ancient beliefs is not altogether in good taste at the present time, for the Greek civilization was destroyed, and any civilization based on their ideals could not long survive in this day and generation. What is needed now is a live and aggressive educational policy which will bring those who come within its sphere into a true relationship with the existing natural phenomena with which they have to deal intelligently in order to become the dominant factors in the situation.

THE FUTURE AGRICULTURAL EXTENSION.

In conclusion, it would seem that agricultural extension promises to be one of the most important agencies set to work to leaven the indifferent practice which has characterized our agriculture in the past, and which has led to the development of a distressing economic situation. As there is much to be learned about the subject, and as the "trail must still be blazed," it seems desirable that the Office of Experiment Stations should give some attention to this matter and should have one or more experts who can devote their whole time to an inspection of the methods in vogue in various institutions and to collect and publish all data on policies which can be advantageously adopted and pursued in the several States. The outlining of courses of instruction for extension schools, for instance, will involve much patient labor. Men in the extension departments are already so overwhelmed with work that they may not have time to give as much consideration to these matters as is advisable.

While it has only been possible to touch on some of the more important phases of the work of the extension movement, it appears from what has already been accomplished in this and other countries that it has passed beyond its experimental stages and has established its value as a means of disseminating the knowledge which has accumulated through the agency of research in the past few years, but which is now not as widely appreciated and utilized on the farm as existing economic conditions make imperative. As a means of getting in touch with the farm, the home, and the school, and giving a new impulse to their activities, and of harmonizing the effort of town and city so they may work together for their mutual uplift, no other phase of educational work yet devised promises so much. Patience and foresight must be exercised with regard to the extension movement. Mistakes will no doubt be made, but in the end these obstacles will be overcome, and with the inauguration of this movement on a scale commensurate with the needs of the age, there will be ushered in an era of progressive achievement on the part of the American farmer such as only the "idealist" has hitherto conceived possible or the poet dared to translate into rhyme.

PROBLEMS OF AGRICULTURAL EXTENSION WORK.

By President KENYON L. BUTTERFIELD, *Massachusetts Agricultural College.*

I propose to outline very briefly indeed a few of the problems that seem most important and pressing in the early development of the work of agricultural extension teaching, as carried on by the agricultural colleges.

The first problem is that of financial support. Several States have made fairly generous appropriations; others have given enough to get the work under way; the majority have given nothing, aside from appropriations from farmers' institutes.

THE ADMINISTRATIVE PROBLEM.

In those States where the work has already been begun the problem of administrative organization is one of fundamental importance. I think it is vital to the ultimate success of the work of the agricultural college that it should be regarded as a unit. The experiment station is in principle simply the agricultural college work in research and experimentation. The regular instruction is simply the institution at work teaching students in residence. The extension work is the institution at work teaching people who can not reside at the institution.

This organic unity should be recognized by all connected with the institution, and its spirit should pervade every phase of the institution's work. Furthermore, the administrative organization should recognize this institutional unity. I think it highly desirable that the extension work be organized under a responsible director, much in the same fashion as the experiment station is now organized; but the fundamental organization of the institution is on the department basis, and each department ought to represent in its activities every phase of institutional work, research, teaching, and extension. In some cases a certain man may perform but one of these functions; in other cases he may perform more than one. But whatever the division of labor, so far as individuals are concerned, there should be a perfect departmental unity along the lines of subject-matter.

DEFINITION AND NOMENCLATURE.

The problem of definition and nomenclature may be regarded by some practical workers as of little consequence as compared with many of the larger difficulties of the work and real needs of the farmers; but extension work can not come to its full flower unless each State profits by the experience of other States. Conferences of extension workers like this develop the need for a clear understanding of terms, and this need will be illustrated at the annual extension section meetings in connection with our association of agricultural colleges. The standing committee of this association whose field is extension teaching hopes in the near future to offer some definitions of terms for the consideration of extension workers. Indeed, in a prior report it has already outlined extension teaching in such a way as to indicate the meaning of certain terms.

TYPES OF WORK.

It is impossible for any one State to undertake in any large way all of the possible useful lines of extension teaching—certainly for the present. There must, then, be some choice of types of work, and this brings before each State the problem of deciding what work will be most useful. Here in Iowa you have centered upon the movable school. In Pennsylvania the correspondence courses have been very prominent. Local conditions and practices, existing forms of extension work, amount of money available, the personnel of the workers are all factors in determining the decision. Personally I should like to see each State push hard on some one or two lines of extension work, while experimenting with many others in a small way and trying them out. It would be fortunate if different States would adopt different major fields of endeavor. Gradually, then, by conference we would come to determine the great and most promising types of work and the appropriate methods for each.

I think that it is also important that each State shall adopt not only certain major types of extension work, but that each State shall also push large campaigns for certain definite ends, as, for instance, a corn campaign, a good-roads campaign, an apple campaign, or a better-schools campaign. Such a campaign ought to be thoroughly organized, and for its best success the extension work should deliberately attempt to coordinate all of the organized forces of the State that can possibly have any interest in the particular subject, thus securing a federation of forces for one large end.

PERSONALITY OF THE WORKER.

Just as the great teacher makes a great college, so the personality of the extension worker determines the success of the work far more than the nature of the machinery. This topic is to be discussed at a later meeting, and I will not trench upon that discussion except to suggest that it should be. in my judgment, an organized policy of every extension department to utilize for the winter months quite a number of graduates of the college of agriculture who are now successful farmers, provided these men are willing to study in order to keep up with the advance of knowledge and are willing to conform their methods to the exigencies of the work.

THE AIM OF COLLEGE EXTENSION.

And, finally, we must not forget that the great work of extension teaching is to benefit men and women; and the benefit is not to be confined to the increase of production of crops nor the securing of larger profits from the business of farming. They are legitimate and even fundamental, but our task is a far larger and more significant one than this. It is nothing less than the carrying on of a great campaign for rural progress, which shall affect the intellectual culture, the social prerogatives, and the moral welfare of all individuals who live upon the land. And, indeed, we must not content ourselves with the thought of benefiting merely individuals here and there, but must ever hold in mind the significance of developing a stronger community life and community institutions in all rural regions. This is really the great task in extension work, in so far as the agricultural college relates itself to the country-life movement. This is the supreme problem of extension work, and calls for the largest vision, the greatest enthusiasm, and the wisest and sanest leadership.

HOW TO MAKE EFFECTIVE THE TEACHING OF COLLEGE AND INSTITUTE.

By Supt. J. H. MILLER, *Kansas State Agricultural College.*

It may here be assumed that thoughtful people of this country are recognizing as never before the great necessity for increasing the nation's capacity for producing human food. Both statesmen and financiers appreciate the importance of keeping this an exporting rather than an importing nation. Students of agricultural conditions know that we have about reached the limit of our food-producing territory. The "wheat belt" has traveled from New York to California, and the fast diminishing yield of the Sierra valleys has almost taken California out of consideration as a wheat territory, and the "wheat belt" has become almost identical with the "corn belt," whose limits are pretty generally recognized. This wheat belt produces an average of only about 15 bushels per acre, while Germany produces over 30 bushels per acre.

If we accept Mr. J. J. Hill's statement that by 1950 our population will reach 200,000,000, or more than double our present population, we must prepare for great changes in the cost of living and for the presence of millions of people in European conditions of poverty or we must make radical changes in the standard of production of food products. Farming methods in this country must change and the farm unit must change. The standard of profit from each acre must change. An acre of western Kansas land last year produced 600 pounds of wheat, human food, worth in the market only about $10. An acre of land near Kansas City produced the same year nearly 4,000 pounds of human food, worth over $1,600. On these two farms the owners used methods known for a hundred years or more. Neither farmer tried any new methods; neither felt that he was indebted to any experiment station for his methods nor for his results. Both had used the common knowledge of his vocation gained, each in his native country; the one in Belgium, the other in—Iowa, probably.

I am bringing to your attention these trite facts merely to support the statement that the great problem in American agriculture to-day is not so much the discovering of new truths nor new plants, but more general and effective education of all the people in the fundamental truths.

If the nation and the State were to wait the slow process of educating only those who apply to the agricultural colleges for class instruction or to wait for the instruction given by bulletins to affect the power of production, this country would not soon be able to solve the world's food problems. We dare not wait. This nation must continue to be an exporting nation. The great call, therefore, must be a call to action, a call for protection for the boys and girls of to-day and to-morrow. The need is for instruction and for inspiration for the mass of producers.

The greatest progress in this education of the farming peoples will not come until agricultural extension receives professional and financial recognition as clearly coordinate with experimental work, not subordinate to it, nor even a part of it. Their scope and character are radically and psychologically different. While there must be the closest and most cordial cooperation, there must be, also, for effective results, absolutely independent initiative. Combining these two lines of work must lessen the effectiveness of both. Training for the one is not per se good training for the other. Success in the one does not portend success in the other; much less does it give a man in one field any warrant or authority for assuming a broader knowledge or a higher wisdom concerning work in the other field. A man may know just how many bacteria there are in a drop of milk or in the end of a pig's tail or be able to tell just how many worms a bird had for breakfast by the manner of its flight, and yet not have much grasp of the educational policy of a properly ordered extension system. It will be recognized some day that agricultural extension is fundamentally a pedagogical problem and not a scientific problem. The central thought and object in the one is a human life out on a farm, while the goal of the other must be the discovery of truth, and the latter is not to be measured as of greater worth than a human soul. Each must approach his own peculiar work in an absolutely opposite attitude and where either attempts to do the work of the other he is standing in the way of real progress, neglecting his own duties and his own development, and he will certainly fail to advance the progress of agricultural life.

It is my conviction, therefore, that the extension system of a State should include the institute as an important factor and that it should be conducted by the agricultural college as a division coordinate in rank with the experiment station, and that it should have a separate staff of men and women for its work under the direct control of the superintendent of college extension. It of course comes under the final jurisdiction of the president of the college, as does every part of the institution, and it is thus very easy for him to guard against tendencies to inharmony. The members of this staff should have no station duties and should be nominated, to the president for election, by the superintendent of college extension, and since no nomination for any position in an agricultural college should ever go to the board of regents that does not meet the approval of the president, it is a simple matter for that officer to insist on nominations that will maintain the unity and harmony of all the college work.

In this discussion I shall treat as the same the teaching of the agricultural college and the teaching of the institute, for it is or should be the same, except in the element of time. The teaching in both college and institute should be done by the same men, or at least by men of similar training, and the teaching in the institute should in quality be of college standard. In my judgment the most effective institute teaching can only come when the institutes are directed absolutely and solely by the agricultural colleges. If the colleges will be absolutely honest with the people and direct the work solely in the interests of the people and not as an advertising adjunct of the college, or to selfishly advance the interests or popular standing of certain men, it will always hold this public service. When they fail to put the interests of the people first they will lose this natural line of teaching. There should be unity and harmony in the instruction given those who attend the agricultural colleges and in the instruction of those to whom the college must go. In this way the college student on his return to the farm will have had the same quality of instruction, the same theories presented, that his father or neighbor has heard at the institute. In the college the young man followed the professor's inductive teaching, whereas the father heard one or two lectures on the same subject, given more after the deductive method—the conclusion—followed by arguments. He went away from the lecture and to his farm laboratory to try out the theory. When the son returns home at the end of each year there is a comparison that adds to the sum of their knowledge. Therefore, my first point in this problem of making college and institute teaching effective is that the institute teaching should be under control of the agricultural college, and should be done, for the most part, by agricultural-college trained men, or men who have kept in close touch with college teaching.

But the teaching solely by lectures, even with two meetings every year, will not accomplish what we wish, because few men will *do* the things recommended. Unfortunately, there are yet too many men who doubt the supernal wisdom of our agricultural college or extension department workers, and who, therefore, refuse to put to practice the theories presented. Then, too, the natural inertia of humanity keeps many from trying the recommendations made. The only thing left is to show them—the demonstration. Realizing the necessity for more demonstrations, the extension department of the Kansas Agricultural College has been taking the following steps to lead farmers to put into operation the principles and theories presented at the institute and at the college.

DEFINITE INFORMATION PAMPHLETS.

It has been decided each summer in conference with the heads of the departments of the experiment station and the president and director just what subjects should be emphasized in the institute campaign for the year for the whole State and what for certain distinct parts of the State. We then have pamphlets or bulletins prepared on these several subjects, mailing them to all of the members of the farmers' institutes, thus tending to intensify the lectures given at the institutes. Of course, for many of the institutes the pamphlets have been received by the members before the meetings were held, and they have thus prepared the members for the lectures, while in the other cases the lectures have prepared the members for the pamphlets, one emphasizing the other. I have believed in magnifying the membership idea and every institute is expected to have a membership fee of at least 25 cents a year, and the law requires all institutes to have a definite membership before drawing any money from the county.

INDIVIDUAL DEMONSTRATION WORK.

Each institute secretary reports to the state office the names, with addresses, of all members. Then a circular letter is sent to each member, this circular letter having attached to it a membership blank where the institute member is asked to give his name and age, character of farm, character of farming, and his special interests, and he is also asked to state whether he is willing to undertake any demonstrations in general farming, stock feeding, dairying, and poultry. Of the approximate 12,000 institute members in Kansas about one-third respond by returning these blanks to the state office and several hundred of them indicate a willingness to undertake one or more demonstrations. Hundreds of others write at length of their difficulties and of their experiences, thus giving the department, through some one of its staff, an excellent opportunity to write a personal letter recommending certain definite steps in the handling of crops and care of stock, and it is indeed gratifying that these personal letters lead in hundreds of cases to putting into actual practice the things recommended in the letter where nothing would have been attempted from the reading of a bulletin or from the hearing of a lecture. When the members' names have been received we send from the office all of the pamphlets or bulletins for general distribution to these members, but we do not send our demonstration pamphlet. When the member's blank comes back to us, however, a copy of this special pamphlet is mailed to him with a personal letter, in which we frequently call his attention to the importance of trying one or more of the demonstrations indicated in the pamphlet. This pamphlet was prepared by the heads of the several departments of the experiment station in conference with the members of the staff of the extension department, and the demonstrations suggested are not experiments, but are correct scientific methods, accompanied with a recommendation that a check be used in all cases. Hundreds of these members write back that they will try some one or more methods, and we have reason to believe that hundreds of other members put to practice some of these demonstrations without writing to the department that they are doing so. Thus we have endeavored to start a good many farmers in the direction of working out some specific methods and keeping a check on them and keeping a record. In these letters we suggest many demonstrations that will serve, in the judgment of the staff officer writing, to demonstrate the wisdom of some particular method of farming; it may be in the matter of some particular method of preparation of seed bed for wheat or for alfalfa or for improvement of pastures or for the use of manures and other fertilizers or for a certain feeding ration or an orchard treatment. In my judgment these demonstrations are clearly a part of the extension work—a putting into practice the teaching of the college and the institute and not a part of the office of the experiment station. If the best results are to come from this work the demonstrations should have the approval of the heads of departments of the experiment station, and there should be the closest possible cooperation between these divisions, but the responsibility for the carrying on of all demonstration work should be with the extension division and with that only. A division of demonstrations or a division of authority will certainly minimize results.

THE DEMONSTRATION FARM.

While the above method is individual and seeking to get individual institute members to do certain things in certain definite ways, the demonstration farm is a definite method for placing before a larger public an object lesson. We are therefore conducting demonstrations on many county and private farms and will gradually take on additional farms as we are able to increase our force of inspectors. Nothing is attempted on these farms without the approval of the heads of departments of the experiment station and the director. On these demonstration farms we are endeavoring to do two things, to grow pure grains of a high-yielding variety for the purpose of growing pure seed for distribution in that particular county and by the best methods to produce the highest possible yield. In some counties the county commissioners were able to sell last spring more bushels of pure-bred corn than had been sold in those counties in the ten preceding years. We are able from these farms to sell pure-bred corn, wheat, and oats. On these fields where pure seed is grown we also endeavor to use the very best possible culture methods, use ample fertilizers, and endeavor to grow the largest possible crops; in other words, we try to do model farming on these farms and, while the work has only been under way for two years, we have been able to grow larger crops than the neighboring farmers and have been able in every case to show a larger profit because we have endeavored to keep accurate records of the cost of all work done. On these farms we have also had a variety plat, testing out about ten of the well-bred varieties of corn with as many samples of local corns, and have in every case proved the superiority of the well-bred over the local varieties. We have also introduced on most of the farms some new forage crops and have introduced in some places tiling or some new fertilizers and have endeavored in every way to conduct model farming on a practical basis, to show the financial superiority of the methods used. In all cases we have used check plats in order that all visitors could recognize the superiority of the methods. We purpose now to continue a particular demonstration farm only about three or four years and take on another farm in another county rather than to continue work permanently in one county. Of course we offer to give general supervision over many county and private farms without assuming any responsibility for results and without attempting any variety tests.

CARING FOR ORCHARDS

For many years our professors of horticulture have been lecturing about the importance of spraying orchards, without getting very many people to practice regularly the recommendations made. This past spring, however, we announced that we would send trained men to orchards for definite work on a small part of an orchard. We therefore arranged to conduct such demonstration work in five counties in eastern Kansas, giving to about 250 trees in an orchard four sprayings and treating the orchard in as nearly perfect a way as was possible, and then we are following up the spraying treatments by detailing a young man to make regular circuits of the five orchards from the middle of June to the middle of September (picking time) to count the droppings from certain trees in the sprayed plat and from certain trees in the unsprayed portion and keeping accurate record, not only of the number of apples found under these certain trees, but he will also endeavor to determine the cause for the droppings and to determine the effects of the different sprays. He will finish his work when the apples are gathered and actual count made of the apples from a sprayed tree and from another tree from the unsprayed portion, and he will take photographs of the "firsts," "seconds," and culls from the two trees of the same variety, same age, and trees only two rows apart. Hundreds of people have visited these orchards already, and we confidently expect that 5,000 farmers will visit these five orchards before the apples are shipped. Thus, seeing is believing, and we will not need to continue giving lectures in those counties on the importance of spraying orchards. We have also undertaken in several cases to handle a given plat of a few acres as a model orchard, cultivating the ground properly, pruning the trees properly, and spraying them properly. This work was done in close cooperation with the departments of entomology and horticulture of the experiment station, and the solutions used and methods of spraying were outlined by those departments.

BUILDING SILOS.

For twenty years the Kansas Agricultural College has been advocating the building of silos, and yet, up to January, 1910, probably less than 60 silos were standing in the State of Kansas. We announced in February that the college would undertake to supervise the erection of a limited number of silos, either concrete or stave, but recommending the concrete metal-lath silo. The best stave silo sells in Kansas for $300, capacity 100 tons. We are building about 40 concrete metal-lath silos, 16 by 30 feet, capacity 120 tons, for about $250. The interest aroused in the announcement that the department would personally supervise the erection of silos, whether concrete or stave, has stimulated interest in silos, and at least 100 farmers have bought stave silos, expecting us to send a trained man to assist them in erecting the same. Thus, more silos will have been built in Kansas by the 1st of August, 1910, than had been built in twenty years preceding. In every community where we have built the concrete metal-lath silo we have left mechanics in the neighborhood fully trained to build other silos. In one neighborhood where we supervised the erection of two silos in May, six others have since been built, and probably twice that number will be built next year in that same community. This work was done on plans approved by the head of the dairy department of the experiment station, building the type of silo recommended by him.

BUILDING BRIDGES AND ROADS.

The Kansas Agricultural College has been advocating for many years the building of concrete culverts and bridges, but commissioners have, as a rule, built only the " tin bridges." The extension department has this year an expert road and bridge man, who has given his whole time to public work in the State. Many counties have decided to build nothing hereafter but concrete or stone bridges, since they have seen some structures built and have known of the economy, and since an approximate cost of such bridges has been fixed by the department engineer. Model roads are being built in different counties, in each case leading to public appreciation of the larger extension of such roads, and again " seeing is believing."

MOVABLE SCHOOLS IN HOME ECONOMICS.

For many years the Kansas Agricultural College has been sending out instructors from the domestic science department on our institute circuits, the instructors being able to give in a one-day institute possibly a forty-minute lecture on some household subject. If the institute has a two-day session this woman could give two lectures. Possibly no other woman could be sent from the college to that county for two, or possibly four, years. This seems almost useless when we consider the momentous character of the work and the great need. I wanted something more definite, and so last spring we tried a little experiment with a movable school in household economics, each school lasting one week. We held these schools in 16 places in the State, in western as well as eastern Kansas. The plan of the school was very simple, but slightly different from any other that we had known of. We sent to each school a member of the domestic faculty or a staff member of the extension department, each accompanied by a graduate student of the college as an assistant. We require a membership in each school of 24, each member to pay to the local committee a fee of $1 in advance, and each member subject to an additional assessment of 50 cents, if necessary; the local committee provides all the room, the supplies, and the entertainment for the two representatives from the college for the week. The work continued from 9 a. m. to noon and from 1.30 to 4 p. m., beginning Monday afternoon and ending Saturday noon, with five lessons in cookery and five lessons in sewing. The distinctive feature of these schools is that each member is required to do the work exactly as she would be required to do it in the domestic science department of the college. We absolutely refused to have any " demonstration " work given except for the fireless cooker. We realized that we could have had a hundred women in each place willing to have come out for two or three hours each day for a series of demonstration lessons or exhibits, with our people doing the work, but it was decided by our extension committee and by the dean of women that we would make these movable schools really *schools,* and not exhibits. In every case our people have believed that the majority of women who attended these schools and did the work had accomplished definite things, had made definite gains, and had really been interested in the doing of the certain definite things, and had learned the reasons why. In some of these places the school left behind women capable of conducting cooking clubs, and such clubs were organized to continue throughout the year.

We have taken these steps in the making more effective the teaching of the agricultural college and the institute, and we believe that these lines of work are worthy of being continued and being developed. I wish to submit therefore to the fraternity these three lines of work: (1) The definite literature relating to the features of a campaign; (2) the demonstration or the showing to the public definite ways of farming, orcharding, and the construction of silos and barns; and (3) the actual teaching to a limited class of certain fundamental lessons in home economics, dairying, horticulture, corn growing, etc., as lines of work that will make effective the teaching of the college and the institute.

AMERICAN SYSTEM OF AGRICULTURAL EXTENSION—ORGANIZATION.

By Dean E. A. Burnett, *College of Agriculture, University of Nebraska.*

The need for agricultural extension work hardly requires discussion before a body like this. It is sufficient to say that the term "agricultural extension" has been used to cover all forms of agricultural instruction carried on outside the regularly organized college or secondary school. In 1908, according to Circular 98 of the Office of Experiment Stations, 16,000 students were registered in agricultural colleges and agricultural schools. The number by this time may have increased to 25,000. It is fair to estimate that not less than 25,000,000 people in the United States are engaged in rural pursuits, so that not more than 1 in 1,000 who need agricultural instruction are now receiving such instruction within the agricultural colleges or the special agricultural schools. All of these persons need the assistance of agricultural extension as a stimulus to their social and intellectual progress and as an aid to their financial success. Their success as farmers is affected by the manner and extent to which agricultural science is applied to their farm operations. Again, quoting from Circular 98, "The colleges themselves exist in response to the public demand for education in agriculture, and the experiment stations were an organized attempt to satisfy the need for scientific information felt by the farmer." While this need continues and will increase, there is a large and increasing public demand for a well-organized and efficient institution or channel through which the common agricultural knowledge possessed by colleges and experiment stations and by intelligent farmers may be brought to the common man and woman living upon the land and may be so presented to them that they may adopt these methods and reap the benefits of this larger knowledge.

FORM OF ORGANIZATION AFFECTED BY FIELD TO BE DEVELOPED.

The organization of agricultural extension work will depend somewhat upon the field which is to be developed and upon the precedence given to various lines of extension. The lines of work most commonly undertaken and which seem most important will include the extension school or movable agricultural school for men and women, the introduction of agriculture and home economics into rural and secondary schools, correspondence courses in agriculture, the use of the demonstration farm to show the method by which the results of investigation may be applied to average farm conditions, and the promotion of agricultural clubs or of some distinctly farmers' organization maintained to develop leadership in the open country.

In this extension movement home economics in all its departments must be promoted. The agricultural industry of the country is distinctly dependent upon the building of homes, and a scientific study of all questions relating to the maintenance of the home, the science and art of cooking, the sanitation, decoration, and economic management of the household, are equally as important as a scientific study of the improvement of soils and crops, of plant and animal diseases, of farm rotations, and of other technical questions related to the land.

ORGANIZATION WITH REFERENCE TO THE COLLEGE AND STATION.

One of the primary questions in the organization of extension work is the relation it shall bear to the college and station. Shall it be correlated with the college, with the station, or with both? Shall it be coordinate with these or subordinate to one or both? The organization which seems most logical to me is to make the college a unit, with several coordinate departments, such as agronomy, animal husbandry, horticulture, agriculture extension, etc., each having its proper field and each coordinated with the other departments in such a manner that there shall be no duplication of work and no field which is not covered in some way by the organization. The experiment station should, in my judgment, be ranked as subordinate to the college, with practical freedom to exercise jurisdiction over a certain field which comes within the scope of agricultural investigation. The practical application of such results to farm operations through demonstration farms or demonstrations upon individual farms, can satisfactorily be carried on within the experiment station, although in its logical classification demonstration work is agricultural extension.

The organization of any line of work in a college will depend somewhat upon our conception of the unit upon which the college is developed. If the idea prevails that the department is the unit and the institution is made up of a federation of departments, each with supreme authority and the right of secession, then it is natural that every phase of work within such department, such as investigation, instruction, and extension work, should be controlled by the department. If, on the other hand, the institution is the unit, it is at least conceivable that it may be advantageous to concentrate as much as possible of the executive work in a few offices, leaving instructors and investigators more freedom to pursue their special lines. Under this organization agricultural extension might become largely an executive department, under the plan now in use in Cornell University, or it might also employ and be responsible for the specialists who worked under its supervision, as in the Iowa State College.

CENTRAL OFFICE.

If agricultural extension is to be organized upon a scale to accomplish the great work which lies before it, it will, in my judgment, be necessary that all of the administrative work connected with such extension be organized within one central office. Whether or not all the men who assist in such work shall belong within this department is of secondary importance compared with the ability to centralize all requests for assistance from outside in a single office where these requests may be systematized and the service required be rendered with the least possible waste of energy and of time and money. That a request for an extension lecture in horticulture should go to the professor of horticulture, in dairying to the professor of dairying, and in plant or animal breeding to this special department, does not seem to me in keeping with our present ideas of economic organization. It is certain that with all these requests centralized in one office they can be cared for at a lower cost and with much greater efficiency than if they are scattered with different departments. It will then be necessary that a superintendent of agricultural extension be employed who is competent to organize the work and to either employ a sufficient corps of men or, with the cooperation of other departments, furnish the men who are necessary for this work. It will be conceded by all that this superintendent or director should rank as the head of a department.

TYPES AND ORGANIZATION.

Briefly stated, the three types of organization in general use are—

First. The organization of the extension department as coordinate with other departments, as in Iowa, where extension work has a separate maintenance appropriation, employs its corps of men with advice of the dean and the president, as do other departments, conducts extension schools, demonstration farms, etc., with a large degree of departmental autonomy. The results achieved in Iowa would indicate that this method of organization is very effective in its ability to promote extension work and serve the people whom it is intended to benefit.

Second. The plan in Indiana organizes extension work as a department of the experiment station. The department is largely executive, making its plans with the advice of a committee and the approval of heads of departments, who furnish extension specialists along the several more important lines. Quoting from Circular 98, Office of Experiment Stations, " Progress in Agricultural Education Extension," the following official action by the faculty of the Purdue University defines the purpose, organization, and status of the extension department: " That the extension department of the agricultural experiment station should be organized so as to provide the machinery necessary for projecting and promoting the work of the several departments of the station and placing valuable information before the farmers of the State; that all extension projects should be considered in a conference of the heads of departments of the station, who shall determine their desirability and feasibility and approve the general plan of work; that the several departments of the station shall, through their respective heads, cooperate as far as possible with the extension department through its head in carrying out the work agreed upon; that each one of the several departments shall provide a man who shall be available to do extension work agreed upon, under the general conduct of the superintendent of extension, and that the department head shall be responsible for the kind of information and the method of presenting the same to the public."

Third. In Ohio agricultural extension is organized as a department of the college of agriculture. This organization is more common than to associate the extension department with the experiment station. The work is under the general direction of a board of five, including two trustees, the president, and the dean of the college, and the extension superintendent. This board prescribes the courses of study, determines the location of school, and has general direction of the work. The superintendent is the executive officer of the board and is a member of the faculty of the college of agriculture. Extension workers are detailed by departments from the instructional force. " In order that experienced men may be available, the college (in theory at least) employs additional instructors to take the regular class-room work while heads of departments are engaged in extension work. Inexperienced men are also sent out under the personal supervision of trained men until they have sufficient experience. In this way the college strives to make sure that only reliable men are representing it in the field, and is at the same time training a body of young men as extension workers and also as teachers in the interior instruction work of the institution."

In New York the extension department is primarily executive, the extension specialists being attached directly to the different departments. Every man in the college of agriculture is expected to spend from one-fifth to one-fourth of his time in extension work.

In Minnesota the extension division is one of the divisions of the college of agriculture. It employs a superintendent and instructors who are designated as specialists in their particular lines. These men hold short courses, special farmers' meetings, conduct demonstration farms in cooperation with the division of farm management, assist farmers in reorganizing their methods, in purchasing pure-bred live stock, in visiting farms, and giving professional advice regarding farm methods. In this State the superintendent of agricultural extension is the superintendent of farmers' institutes, although these lines of work are under different boards of control.

I have taken some pains to make inquiry regarding the opinions of agricultural college and station men upon the point of making the extension lecturer responsible to the extension department or to the department of the college and the station which he represents upon the platform. This investigation would lead me to believe that the majority of colleges favor the employment of extension men within departments and the assignment of these men to the department of agricultural extension when such service is necessary. I am not fully convinced that this will ultimately be found the most feasible method, although this seems to be workable in many institutions at the present time and can not be seriously criticised from the standpoint of either the extension department or the college, provided the extension department is able to depend upon these men at the time they are needed and provided further that a sufficient force of men is made available within the department so that it can respond to all reasonable demands upon it for service. Here, however, I anticipate will be the main difficulty with the form of organization. The department, if it be specially interested in investigation, will select its men largely with reference to their ability to carry on investigation. The investigators in nearly all experiment stations lay out for themselves more work than it is possible for the force at hand to carry on, and if the men who are depended upon for extension work are in the midst of important lines of investigation it will be difficult for the extension director to command their services as he may find it necessary. It may also be difficult for him to insist on the selection of men who are specially gifted in the presentation of their subject to the people. Agricultural extension work, for the present at least, must deal with subjects in the large; it must present the main facts, stripped of many of the details which are important in a thorough and complete analysis of the subject. In this presentation, the man who has the requisite scientific knowledge and who studies agricultural subjects in their special relation to the needs of farm practice will be more successful in presenting the main facts, stripped of technical complications, than the man who spends most of his time studying details connected with new problems. For this reason a considerable force of extension men should be employed who have a large general knowledge of agricultural science rather than an extremely technical knowledge of some particular branch.

THE DEMONSTRATION THEORY.

The work of the demonstration farm or of special demonstrations on private farms is closely related to extension work, and the extension man should be eminently qualified to carry on this line of work. Furthermore, this work brings him in contact with actual farm conditions, presenting the same difficulties which the farmer will face, and gives him the experience which specially qualifies him to present these subjects for extension purposes. This is a strong argument in favor of placing special demonstrations or demonstration farms in charge of extension men, whether these men are associated with the technical department or have their connection wholly with the extension department. I am of the opinion that extension specialists might well be employed in a survey of the agricultural practice of a given locality for the purpose of analyzing and classifying the methods of different farmers in a region and the success attained by these farmers, the main purpose being to secure information which could be presented in extension or the farmers' institute work bearing upon the best farm practice of the region. This work would be classified within the extension department or within a department of farm management.

UNION OF COLLEGE EXTENSION AND FARMERS' INSTITUTES.

Where the farmers' institute work of the State is so organized as to be united with agricultural extension under one management, this would seem to be an extremely fortunate arrangement. We all agree that farmers' institutes are a form of agricultural extension and can most consistently be organized within an extension department. Where this arrangement is not possible it is probable that some agreement can be reached to prevent duplication of effort.

ORDER OF PRECEDENCE.

The lines of extension work and the order of precedence of the different lines will doubtless vary with the State. In all States correspondence courses will be necessary, and these should be most carefully considered. Methods should be adopted comparing in excellence with those used by the best private correspondence schools. An effort should be made to continue the interest of the pupil and not to permit him to drop by the wayside because he must work with texts too general or too complex or not adapted to his needs. Every pupil must be handled as an individual. Correspondence pupils can not be dealt with by wholesale.

In nearly all States I believe the extension school or the movable school will be one of the first lines of extension developed. The extension school has been tried in many States and with a large degree of success. It naturally follows a period of farmers' institute teaching. The progressive people of the community come to feel the need of more thorough instruction than can be given in a single lecture or a one or two day farmers' institute. They not only want clear-cut lectures, but want the opportunity to do something—to judge corn or cattle or potatoes, to churn the cream and make the butter, to make the cake or be sure the demonstrator can do so, and to know the reason why each step is taken. Both farmers' institutes and extension schools will be successful nearly in proportion as they do things or require the pupils to do the things they teach. The community must be ready for the short course or it will fail. They need to be enthusiastic and ready to pay the price—not only the expense, but to give their time and their undivided attention to this work during the week for which they are registered as pupils. The extension department must have a man who can bring the expectations of the community to a high point. He must then " make good " or he will not be requested to return. The instruction must be systematic and practical. It must be interspersed with entertainment. Boys and girls must be interested. They are great advertisers. They have youthful enthusiasm. They help the short course to " make good." They will become firm converts to new and better methods.

INTRODUCING AGRICULTURAL AND DOMESTIC SCIENCE INTO SECONDARY AND RURAL SCHOOLS.

Next to the movable school the introduction of agriculture and domestic science into secondary and rural schools would seem to me most important. A specialist should be employed to study the school problem and to adapt agricultural instruction to its needs. He should be thoroughly acquainted with school methods and should have a fair agricultural education. Under his supervision pamphlets or bulletins should be written adapted to the use of the schools. He should assist the teacher and the pupil in adapting this instruction to particular conditions, should organize and inspire the work in teachers' associations, county institutes, etc.

The work of introducing home economics or cooking, sewing, and domestic art into secondary schools should also be in the hands of a trained expert. I have not the information necessary to explain the details of introducing agriculture and domestic science into secondary and rural schools, but this work has already proceeded far enough in many States to point the way for the successful accomplishment of this purpose.

THE ORGANIZATION OF FARM CLUBS.

The boys and girls' agricultural club has been found very efficient in introducing agriculture into primary and secondary schools. They stimulate boys and girls to study economic farm questions. They develop vocational training in connection with the schools, and should be worked out as a part of the general school system of the State. By assisting the teacher and the county superintendent to maintain these clubs with local, county, and state contests we may change the whole point of view of primary and secondary schools until they become in fact vocational schools. For the present at least this is one of the important lines of agricultural extension. In a well-organized extension department, at least one man should devote his time to the introduction of agriculture and one woman to the introduction of home economics in the schools.

Most of the extension work done in rural communities must be done through organizations. It is a mistake to think that organization, once perfected for the purpose of holding a farmers' institute or an extension school or for similar purposes, should lie dormant throughout the year, to be reorganized and set in motion when again needed for a specific purpose. These organizations will become the nucleus around which all agricultural extension may be built. They will furnish the inspiration for social betterment and rural leadership. In older States these organizations have already proven their worth in stimulating rural communities to greater intellectual development and to higher social ideals. The agricultural-extension movement will find the farmers' organization the most important ally in its work for rural progress.

AMERICAN SYSTEM OF AGRICULTURAL EXTENSION—METHODS AND EQUIPMENT.

By Prof. P. G. HOLDEN, *Iowa State College.*

METHODS.

The scope and purpose of the work in Iowa is defined by the act of assembly under which the department is operating. The act is as follows:

"SECTION 1. Agricultural extension and experiment work. That the Iowa State College of Agriculture and Mechanic Arts is hereby authorized to continue and to extend the system of agricultural-extension work authorized by the thirty-first general assembly. Under this system the said college shall be authorized to conduct experiments in the various portions of the State and to give instructions in agriculture wherever in the judgment of the college authorities it shall be advisable, with reference to the various lines of agricultural work maintained upon the college grounds at Ames, Iowa. The college authorities are authorized to give instructions in corn and stock judging at the agricultural fairs, institutes, and clubs, and to aid in conducting short courses of instruction at suitable places throughout the State; to give lectures and demonstrations on the growing of crops and fruits, on stock raising, dairying, land drainage, and kindred subjects, including domestic science. This work shall be so planned as, in the judgment of the college authorities, is best calculated to carry to the communities remote from the college the benefits of the instruction given by the teachers in the state college and the results reached in the work of the experiment station."

RULES GOVERNING THE OPERATION OF THE DEPARTMENT.

The general method or plan of operating the department is given in the following resolutions of the board of trustees:

"1. That the agricultural-extension work be established as a department in the agricultural division of the college, and the head of such agricultural extension shall bear the same relation to the dean or head of the agricultural division as is borne by heads of other departments in the division of agriculture. The head of said agricultural-extension work and other instructors, lecturers, and employees therein shall be appointed in the same way that has hitherto been observed in the appointment of heads, professors, instructors, and employees of other departments, such as animal husbandry or the like.

"2. The agricultural-extension funds *shall not be used for supporting any feature of education or experiment work that is carried on at Ames,* except such assistance as may be rendered in connection with the special two weeks' short course held at the college the first two weeks in January.

"3. The local expenses of lectures, demonstrations, short courses, and other forms of agricultural education shall be borne by the communities in which they are held, and so far as possible the traveling expenses of lecturers and workers in attendance on such work shall be met by the communities or organizations served."

THREE METHODS OF ORGANIZATION.

When the department was organized three methods or plans of operating were proposed and discussed.

The first plan suggested was to divide the appropriation made for this work between the various departments, thus relying on them to secure additional help for the extension work.

The objections offered to this plan were (*a*) that the extension work would not be so well done as when placed in the hands of a separate department specially organized for this particular purpose; (*b*) that no one could be held directly responsible for the use of the appropriation; (*c*) that the efforts of the college would be diffused or scattered instead of concentrated along lines of fundamental needs of the people; (*d*) that the money appropriated for *extension work* should be used in good faith for *that* purpose and *not* for instruction and experimentation at the college.

In other words, if the money and work were assigned to the various departments, it was held that some department most interested in or in sympathy with the extension work would push it, while others would neglect it, do it poorly, or largely divert the funds to local department needs.

A second plan proposed was to elect a sort of a quasi superintendent or secretary, with but little power or authority, the extension workers to be appointed by the various departments and largely responsible to them. In this case the so-called superintendent, when he wanted help for institutes, short courses, etc., was expected to go to the various departments and try to arrange with them for the necessary help, etc. But the discussion had not gone far on this plan when it was discovered that it had all the objections offered to the first plan, and, in addition, two fundamental objections, which made it absolutely impractical from an executive or business standpoint, viz, it would be a constant trouble maker in the college and be weak and inefficient in its services to the people.

PLAN ADOPTED.

The third plan discussed and the one which was adopted unanimously by the trustees was to place the extension work in the hands of a distinct and coordinate department, which should bear the same relation to the college authorities as other departments, the instructors, lecturers, and employees therein to be appointed in the same way that has been observed in the appointment of professors, instructors, and employees of other departments, etc.

It will be observed that this plan did two things which are fundamental: It made the superintendent of the department directly responsible for carrying forward the work in a manner satisfactory to both the college and to the people of the State for whom it was established; and, second, it gave to the superintendent the authority and supervision necessary to execute the work.

This plan has now been in operation in Iowa for four years, and it can be said without fear of contradiction that it works, and without any unnecessary friction either with the people of the State or with the associated departments of the college.

CHANNELS THROUGH WHICH THE DEPARTMENT REACHES THE PEOPLE.

It will not be possible here to do more than simply enumerate some of the more important channels through which the department is able to assist the people of the State.

1. Short-course schools—
    - (*a*) General, covering live stock, field crops, domestic science.
    - (*b*) Special, covering dairying, horticulture, corn, domestic science, live stock, etc.
2. Farmers' institutes and other meetings, such as street fairs, carnivals, picnics, special dairy and corn meetings.
3. Special trains—corn, dairy, domestic science, etc.
4. Press of the State, agriculture—daily and local.
5. Schools, county superintendents—teachers, pupils, teachers' institutes, etc.
6. Demonstration and experimental work on county farms and with individuals.
7. Granges, agricultural clubs, corn clubs, cooperative organizations, women's clubs, and the commercial clubs of towns and cities.
8. Fairs—state, county, school.
9. Stock and grain judging contests, corn contests for men and for boys and girls.
10. Bulletins, circulars, leaflets, score cards, etc.
11. Dairy test associations.
12. Marsh dairy prize contest.
13. Letters—answer to questions for information, etc. Letters sent out asking for information relative to drainage, alfalfa, rotation of crops, shade trees, live stock management, etc.
14. Traveling library—books and bulletins on agriculture and domestic science.
15. Lists of books on various subjects for distribution.
16. Loaning material for schools and aiding them in securing bulletins, charts, etc.
17. Distributing valuable seed corn, oats, alfalfa, etc.

It will be seen readily from the above list that the demands on the members of the extension staff are not only very heavy, but are of such a nature as to require constant time and attention throughout the year.

Short courses, farmers' institutes, corn shows for both men and boys occupy their time to the practical exclusion of everything else during the winter months; state, district, and county fairs, farmers' picnics, harvest festivals, street fairs and carnivals, granges, clubs, and the county-demonstration work make heavy demands during the fall; special trains, planting county-demonstration farms, special seed-testing demonstration, and township picnics occupy all the available time during the spring; while throughout the entire year the work continues in the schools and with teachers and superintendents, the dairy-test association, and Marsh-test association work, special domestic-science courses, addresses before women's clubs, commercial clubs, etc.

While all this is being done, time must be found for preparing outlines, charts, circulars, gathering data, apparatus, and material with which to work, and to answer correspondence, prepare courses of study, lists of books, bulletins, and material, furnish much detailed information by mail, and to meet the hundreds of people who call upon the staff annually in person for assistance.

PLANNING THE WORK.

It would require much space to detail all the methods of conducting the extension work; but the following may throw some light on them.

All members of the extension staff meet at 8 o'clock Monday morning for the purpose of planning the week's work. Nothing has done so much to unify and to direct the efforts of the department along important lines as this, and certainly nothing has done so much to stimulate and enthuse the members of the department and to consecrate them to the great work they have undertaken.

CONCENTRATION OF EFFORT.

The efforts of the members of the staff are not confined solely to their respective lines of work. There are times when the entire force of the department is directed toward some particular problem—it may be the school question or it may be the seed corn or some phase of county-demonstration work—the purpose being to create interest in the subject and secure some definite action on the part of the people. In fact, two or three important lines of work are singled out for the year and every member of the staff will lend his aid to the movement on every occasion.

THE LOCAL PEOPLE MUST CONTRIBUTE.

The principle that the local people must contribute their share in both money and work in order to secure the services of the department has been pretty thoroughly adhered to and the advantages gained by this method have been marked.

Little can be done for the people unless they also put forth their own efforts. Things are regarded as cheap unless they cost.

It secures the active interest of the people. It places them in the attitude to be helped. It adds greatly to the funds of the department or rather supplements them. For example, during the past year the local people of 21 short-course communities contributed $33,723 toward the running of their short courses. This is $1,723 more than is appropriated by the State annually for the entire extension work. The total amount contributed by local people in all lines of extension work during the year in order to secure the services of the department was $69,375.51. This was in addition to the regular department appropriation of $32,000, and of course does not include the immense amount of labor on the part of local committees and individuals, who made no charges for services.

GO WHERE WANTED MOST.

Generally speaking, we go to those places where we are wanted most. The success of the work in these communities wakes up other communities with less interest; they begin to wonder why they can not have something of the kind. For example, the corn train will not stop at a town unless the people send in a petition. This makes it their train. There is a larger attendance and a more receptive audience.

A locality to secure a short course must obtain the signature of at least 200 people—100 from the country and 100 from the town—each agreeing to pay $10 or his pro rata amount necessary to take care of any deficit should there be one in connection with the running of the short course. In other words, it becomes the community's short course and not the college short course. If there is a deficit, the assessment on each of the 200 members of the guarantee pledge will be small. Of the more than 60 short courses held in the past I think that it has never been necessary, at least more than once, to assess on the guarantee pledge. These 200 signers to the pledge become pushers or workers in dead earnest and there can really be no such thing as failure. This same principle is carried throughout all the lines of work.

EQUIPMENT.

The equipment for extension work consists of—

1. The workers.
2. Apparatus, rooms, etc.

1. *The workers.*—At present the department has 18 men and women who devote their entire time to extension work. Extra help, mostly graduates who were formerly in the department, but are now on their farms, are engaged for the winter months of December, January, and February. In addition to the above a large amount of help is required to assist in holding short courses, the making of charts, preparing of various kinds of material, and for conducting the demonstration work on the county farms, at fairs, etc., and for carrying forward the work of the dairy test associations and the Marsh test.

It is not easy to find good instructors or experimenters, but it is much more difficult to find men and women fitted by temperament and training for extension work.

The work is new, and as yet our colleges have made no effort to train extension men. Many who could do the work will not leave their homes for the strenuous life of an extension worker, to be subjected to all kinds of hardships necessitated by this kind of work. The extension worker must not only know his subject, but he must know it in its application to the particular people he is trying to help. In other words, it must work out in practice under their conditions.

Again, the extension worker must not only be a good teacher who can instruct; he must be more than a teacher. He must be a missionary who makes a disciple of everyone with whom he comes in contact. The extension worker must know the needs of the people; he must love his work; he must be full of enthusiasm, tireless in his efforts, and a genius at showing people how to help themselves. Nothing, absolutely nothing, can compensate for an inefficient extension worker. There will be so great a demand in the near future for extension workers that the tendency will be to take anyone who is loose, some student who has done a little experimenting or teaching, or, worse yet, some fellow who can neither teach nor experiment—who is full of words but not possessed of any very great purpose.

2. *Apparatus, rooms, etc.*—The department has accumulated a large amount of illustrative material, such as charts, maps, weeds, weed seeds, insects, etc., at a cost of thousand of dollars. The members of the department are constantly planning and making new charts and devising new apparatus. A mere enumeration of the illustrative material would require a dozen typewritten pages. I can not too strongly emphasize the importance of good illustrative material in extension work. To be most effective it should be worked out, planned, and prepared by the person using it. If the extension worker's time is consumed by other college duties when he ought to be gathering his facts and preparing his material, he will go out to the people poorly equipped for his work, and as a consequence accomplish but little, or, in other words, fail, though he may not realize it.

While the short course is but one of many lines of work undertaken by the extension department, it will serve as an illustration. It is fitted out on a more extensive scale than the others and requires about the following workers and equipment.

Two and often three short courses are in session at the same time in different parts of the State.

Three cars are required—one exhibition car, one stock car, and a baggage car. The first contains material illustrating experiments at the college, such as rotation of crops, results of testing seed corn, stock-feeding experiments, incubator and brooder, weeds and weed seeds, a "traveling library," tuberculosis studies, circulars for distribution, and a vast amount of corn, grass, grain, and other illustrative material. The stock car carries from the college two horses, beef and dairy cattle, hogs, and sheep for study purposes. The baggage car carries equipment for domestic science, such as food charts, cooking utensils, home-decoration materials, home nursing outfit, etc. We carry three or four hundred corn trays to hold the study corn; corn testers, planters, sorters, etc.; many charts on all subjects relating to animal husbandry, dairy farming, and farm crops; silos, drainage material, cement, gasoline engines, milking machines, spraying machinery, poultry equipment, etc.

In addition to this the local people furnish the bulk of the corn and stock for class work. The people furnish suitable, well-lighted rooms for domestic science, farm crops, and live-stock work; also exhibition rooms for display of corn, cooking, sewing, school work, etc. An opera house, hall, or church is provided for the evening programmes, which are of a somewhat more popular nature.

The workers at a short course consist of an advance man who goes a week before the short course begins, to prepare rooms, secure corn and stock for class work, put over germination boxes for seed-corn testing, secure rooms and board for staff, and have everything in readiness.

One man has charge of the exhibit car, to explain the illustrative material, and one man is required to take charge of the stock car.

There are three domestic-science workers, five corn and farm crops men, at least two animal husbandry men, and in addition to these fourteen who remain the entire week are specialists who give one or more lectures on soils, horticulture, poultry, veterinary subjects, tuberculosis, agriculture and domestic science in the schools.

AMERICAN SYSTEM OF AGRICULTURAL EXTENSION—METHODS AND EQUIPMENT.

By Prof. G. I. Christie, *Purdue University.*

In discussing the subject of equipment and methods in agricultural extension, it may be well to consider the purpose and object of this new movement. For many years the farmers' institute, the agricultural press, and other agencies have been most important factors in arousing interest and carrying information to the farmers. Through these mediums a great work has been accomplished. In fact they have prepared the way in many instances for the new movement now being started. The new lines inaugurated are simply supplemental to the work already under way or are steps in advance.

The work of the agricultural extension department consists of promoting schemes and developing lines that will not only interest the people and acquaint them with the facts pertaining to their occupation, but will cause farmers to accept these truths and apply them in their daily operations. The problem in agricultural extension is not so much that of carrying new facts to the people as it is how to get them to do those things which should be done.

TRAINED MEN ARE NEEDED.

The most necessary and important equipment of an extension department is that of men. An extension man must have agricultural knowledge, practical experience, ability to organize and lead, and the power to inspire others to take up with improved methods and apply them in their work. This man who represents the agricultural college and acts as a leader and adviser for the agricultural classes assumes a great responsibility, and to be able to meet it fairly and adequately he must have had a broad and thorough training. At this time there are few men such as described available.

Agricultural colleges have up to this time been educating teachers for the class room and investigators for the experiment station, but little or no attention has been given to the training of men for extension work. This extension field is new, but very large. The present need for men is so great that institutions are forced to engage young men with little experience or training. These men must have training before they are qualified to do high-class work.

Just how to give young men the training and equipment necessary for extension work while they are in the service is a problem before many departments. At present there is no general solution, as local conditions must be considered. In Indiana we are attempting to solve the difficulty through our organization. Our plan is to place all extension projects in charge of the superintendent of extension. The men who are assigned to carry out the individual pieces of work are provided by the respective departments, and are known in those departments as extension men. A recent ruling of the faculty of the institution will give a clear idea as to our form of organization.

"That it is the sense of those present that the extension department of the experiment station and school of agriculture should be organized so as to provide the machinery necessary for projecting and promoting the work of the several departments of the station and the school, and placing valuable information before the farmers of the State; that all extension projects should be considered in a conference of the heads of the departments, who shall determine their desirability and feasibility and approve the general plan of work; that the several departments shall, through their respective heads, coöperate as far as possible with the extension department, through its head, in carrying out the work agreed upon; that each of the several departments shall provide a man who shall be available to do extension work agreed upon, under the general direction of the superintendent of extension, and that the department concerned shall be responsible for the kind of information and the method of presenting same to the public."

I believe that this form of organization has some advantages at this stage in the development of extension work. By this plan a man is kept in close touch with the work of the department which he represents and is in a position to secure that direction and education which as a young man he must have. In the second place the department is made responsible for the character of information given out. Another advantage of this organization is that all departments have a direct interest in and feel responsible for the extension work being done in the State. This universal consideration of and backing for the extension movement gives it a standing in the State which can not be secured otherwise.

SPECIAL EDUCATIONAL TRAINS.

One of the first and important movements in agricultural extension has been the operation of special educational trains. Through these the interest of the people has been aroused and their attention directed to specific lines of work. Educational trains have not carried any particular new facts to the people, but have been instrumental in carrying old and important truths out in an effective way. When these facts have been backed by a railway corporation and given the momentum of a train rushing through a State, they have been impressed upon the people in a way accomplished by no other means.

In this work I believe that experience has proven that the teaching of one subject at a time from the train is better than attempting several. By this plan the interest of all the people is centered and directed toward one problem. Where several subjects are taken up at the same time on a train, more or less confusion is bound to result and the actual good accomplished is not nearly so great as when a single idea is advanced.

The early trains were believed by some to be more or less of a fad, and it was predicted that they would not last. In Indiana we have been operating trains for six years and find that when the second, third, and fourth train goes over a road it is met by larger and more interested crowds and, so far as we can judge, accomplishes a greater work than our first trains. The special train has come to be one of our most important educational agencies and I feel will be used for some time to come in our extension work.

SHORT COURSES.

During recent years the majority of our agricultural colleges have held at some time during the year a school from one to two weeks in duration for the farmers of the State, known as farmers' short course, farmers' week, etc. These in every case have been a great success and have done much to give to farmers a high type of practical instruction.

At the Purdue farmers' short course for the past four years we have had an average attendance of more than 1,200 people. This body has been as large as can be handled conveniently and satisfactorily at our university. However, while we count this a large and successful course, when we think that in our State there are more than 225,000 farmers, we must recognize that this course is hardly large enough to inoculate the several communities. We also recognize that in these courses the majority of the men who attend are from the best farms in the State. The man who grows a low yield of corn, feeds his stock at a loss, and gives little attention to improved methods is seldom found in these schools.

Again, when it is recognized that this course was a good thing for 1,200 farmers, the question was raised as to why it would not be a good thing for all of the farmers of the State. This brought up the next problem of how these people were to be reached. The district short course was suggested as a means of taking the work out to the people.

These district short courses are located at some central point with large accommodations in the way of halls and rooms and good railway facilities in the congressional districts of the State. A local organization is effected and the course in this way promoted. The courses are one week in length and held during the winter months. The programme consists of practical instruction in agronomy, animal husbandry, horticulture, domestic science, and rural-school agriculture. The requirements of the local organizations for these courses are: A guaranty fund of $1,000, signed by not less than 200 farmers and business men; a hall which accommodates tables for 500 men at one time for corn judging; a hall that will accommodate raised seats for 500 men at one time for live-stock judging; a hall that will accommodate 500 women at one time for domestic science; a hall that will accommodate 200 school-teachers for the study of rural-school agriculture; a hall or theater for mass meetings that will accommodate the entire class for general lectures.

To direct the work in these schools the extension department furnishes from the station and school 12 to 16 instructors. From the State several practical farmers and institute workers are secured to assist in the instruction in corn judging, weed seed identification, and live-stock judging. The corn and grains for the judging work are furnished by the farmers of the community; the live stock is furnished by the university.

One object of these courses is to present data relative to farm practices and to demonstrate clearly the application of same. Interest in agriculture has been aroused in this State, and we feel that it is now time that some good solid work was given to the people.

In connection with these short courses a corn show, fruit show, poultry show, and bread show are usually held, liberal premiums being offered by the people of the community. That these schools are popular and are reaching a large number of people is shown by the attendance at two of the schools last year, Evansville, 2,137, and Greensburg, 876.

COUNTY FARM EXPERIMENTS.

One effective method practiced in reaching the farmers of the several communities has been that of carrying on demonstration work on the county farms of the State. On these farms work can be conducted under the same conditions as those which exist in the county, and the results are directly applicable. The work is so situated that it can be viewed by large numbers of farmers of the county, and in this way its value is much increased. Tests of corn, oats, wheat, potatoes, and other crops grown in the county are made. The work is conducted by a local organization in cooperation with the extension department. The farmers of the counties are expected to assist in planting, threshing, and harvesting the crops, while the superintendent of the farm cares for the cultivation. This work has proved very satisfactory and has produced marked results.

HORTICULTURAL DEMONSTRATIONS.

Horticultural demonstrations have been organized and carried on with the idea of interesting the people of the State in growing more fruit and in giving more care and attention to home orchards. These demonstrations are held in the open air in an orchard provided by the community. The programme usually consists of two sessions, one in the forenoon and one in the afternoon.

At one session questions are discussed which relate to general orchard management. Pruning is explained, the orchards of the community criticised and discussed, right and wrong pruning methods and their results are illustrated by the object lessons furnished by the orchard in which the meeting is held, and one or more trees pruned correctly to demonstrate the points brought out in the discussion.

At the other session the questions of insect and disease control are discussed with especial reference to spraying. In the discussion the principles which govern spraying practice are explained and such insect and disease specimens identified as have been brought in. The methods of making sprays for the San José scale, the apple scab, and the codling moth are explained, and the materials prepared before the audience so that they may observe the different steps in the process. Spray pumps and accessories receive attention also. Those provided from the neighborhood are discussed and their merits or disadvantages brought out. Some of the spray material is put on the trees in order to demonstrate the points to be observed in thorough spraying and in order to emphasize the qualities necessary in an efficient spraying outfit. These demonstrations have proved to be very popular, and through them encouraging results have been obtained.

JUDGING CONTESTS.

In order to increase interest in live stock in Indiana much attention has been given to judging contests. The state board of agriculture, several county fair associations, farmers' institutes, and district short courses have conducted these successfully and are now giving them a regular place in their premium lists and programmes. Stockmen believe that contests do much to direct the attention of young people, as well as older people, to the value of good live stock and the importance of the same in Indiana agriculture. It is found that the judging contest not only causes the people to study the history and characteristics of the animals they are to judge, but it brings them in direct touch with the stock and the breeders, and interests them in the most profitable and permanent form of agriculture; i. e., "live-stock farming." The contest also serves as a medium through which to interest young people in all phases of agriculture.

In these county fair contests the students are required to place, and give reasons for such placing, classes of beef cattle, dairy cattle, draft horses, fat hogs and sheep. Premiums are offered for those making the highest score. These premiums are educational in character, usually being a trip to the state fair, a trip to Purdue University for one week to attend the farmers' short course, or good agricultural books.

The county fair contests are followed by the state fair contest, where classes of cattle, hogs, sheep, horses, and grain are judged. In the state contest $500 in premiums are offered. The premiums are scholarships in the Purdue School of Agriculture.

These contests have done much to arouse interest and to turn large numbers of young men toward the agricultural college.

INDUSTRIAL CONTESTS FOR BOYS AND GIRLS.

A movement started in our State which has done much to further the cause of agriculture has been that of industrial contests for boys and girls. More than 45 counties have conducted corn-growing, bread-making, and butter-making contests. Thousands of boys and girls have been interested and actively engaged in these contests which are working directly for the betterment of agriculture and the home.

The contests have been popular and have been strongly supported, because they offer a medium through which the cause of agriculture can be furthered. These bring the boys and girls into close and active relationship with the things that are immediately about them. They encourage study, open new avenues of thought, bring about a realization of the importance and magnitude of the interests of country life. They have created a respect for industry and labor, and have done much to elevate work from the plane of drudgery to one of pleasure.

In these contests the extension department has cooperated with the farmers' institutes of the State, and through these organizations has been able to secure much aid. Usually the institutes have furnished premiums for the contests, while the extension department took care of the organization and supplied all the printed literature. During the year bulletins on the various subjects have been supplied to all members of the clubs, and through these they have been able to inform themselves on the different phases of the work in which they are directly interested.

RURAL SCHOOL AGRICULTURE.

The rural schools of the State present a large and most important field for work along agricultural lines. They offer an opportunity not only to reach the boys and girls, but the people of the entire community as well.

To assist teachers in the teaching of agriculture the department has prepared collections of weed seeds and wheat products, insect mounts, and special publications.

In connection with the district short courses the department is also holding a three days' teachers' course for the teachers of the district. This course consists of practical demonstrations in methods of teaching agriculture. These courses have been successful and have reached a large number of teachers of the State. The department is also organizing a corps of instructors at the university, who will be supplied with outfits for demonstration work, and who will be sent to give instruction at the teachers' institutes of the State.

In this campaign for the teaching of agriculture in the rural schools the department is taking an active part, and we believe much good will result from it.

FAIR EXHIBITS.

One of the means through which the work of the experiment station and school of agriculture can be placed before the people is the fair exhibit. The county fair, which is held for and patronized by the rural people, affords an excellent opportunity for extension departments to present the agricultural work in an effective way. It is also found that in past years the county fair has run, to a large extent, to horse racing and other light attractions. People are now beginning to plan for these county fairs something more directly educational. The fair managements are therefore very anxious to obtain and are willing to pay their share for an agricultural exhibit such as can be made by an extension department.

In planning an exhibit for a county fair one must always keep in mind the very poor accommodations that may be had for such an exhibit. The county fair buildings are poorly arranged and have a very limited amount of light. They are usually too small for the many exhibits placed in them. After some experimenting we have decided that the exhibit box is the best thing to use where the exhibit is made up in a small way. Our exhibit this year consists of 13 boxes, 5 feet long, 3 feet wide, and 6 inches deep. In these the materials from the several departments are placed and arranged just as we wish the people to see them, properly labeled, and securely fastened. The exhibit consists of photographs, grains, fertilizers, feeds, Babcock testers, pruning apparatus, spray pumps, specimens of diseased tissue, weed-seed collections, germinators, etc. Every part of the exhibit is supposed to represent some part of the work of the institution and to carry information which will be of direct value to fair visitors. This year the department has two such exhibits as described on the road, and during the fall they will visit 20 county fairs.

On the state fair grounds Purdue University has a building for its sole use. In this building a working dairy is conducted and exhibits made from the several departments of the experiment station and school of agriculture during the week of the state fair. These exhibits have proved of great value. They have done much to give the people in a direct way some practical information, and they have placed the people of the State in close touch with the men who are conducting the agricultural work.

AMERICAN SYSTEM OF AGRICULTURAL EXTENSION—QUALIFYING TEACHERS.

By Dean THOMAS F. HUNT, *The Pennsylvania State College.*

The discussion of that phase of the subject which has been assigned to me to open must be more or less academic, since one could no more expect to provide preparation for workers in agricultural extension than he could deliberately outline a course of instruction that could be safely guaranteed to prepare for the governorship of the several States or for the presidency of the United States.

A young man may, even before he enters the high school, decide to become a chemist, botanist, agronomist, horticulturist, dairyman, lawyer, physician, minister, farmer, or business man. Most young men decide, if not before entering college, at least before they have gone very far in their college course, what their life work will be, although, of course, in many cases circumstances enter later to change this decision. It is not probable that any young man has ever yet consciously chosen to prepare for extension work, and it may be doubted whether men ever will deliberately choose to prepare for this vocation.

Had I had the choosing of my subject, or even the phrasing of the title, I would have stated it differently. Presumably it was intended by the title "Qualifying teachers" that a discussion should be opened on how to prepare qualified men for the work of extension in existing agricultural colleges. The objection to the title "Qualifying teachers" is that a man may be an eminently successful extension worker and be in no sense a teacher in the usual and proper acceptance of that term. There are extension workers who are striving to put paint on the farmers' barns, and magazines in their homes, or endeavoring to so reorganize our public-school education that the boys and girls who hereafter spend their days upon the farms of the United States will get the most out of life that their surroundings will permit. These extension workers are not dealing with the principles of pedagogy. Their problem is to get results—to bring the answer. I would suggest that the title read—

"QUALIFYING EXTENSION LEADERS IN AGRICULTURE."

The extension leader in agriculture should possess, at least, the following four qualifications:

(1) Gray hairs.

(2) A first-hand knowledge of farming operations, usually called practical experience.

(3) Common sense.

(4) A winning personality.

Since you have been promised an academic discussion, and since the above are not noted academic qualities, I may venture, even at the risk of repeating what has been said by the speakers who have preceded me, to discuss the difference in motive underlying certain phases of agricultural extension.

In this discussion we leave aside entirely any possible theoretical differences and we do not stop to consider whether the work under consideration is true extension work or not. All that it is proposed to do is to consider the types of work actually being performed by the departments called agricultural extension or denominated by some equally noncommittal title.

Here I must apologize for not having sent out to the twenty-six extension departments a typewritten set of questions requiring ten minutes to dictate and ten hours to answer. I keep two waste baskets in my office. One is for ordinary waste material; the other is for circular letters of inquiry. What I know of extension work has been acquired by absorption. You will now understand why I know so little about it.

TYPES OF EXTENSION EFFORT.

If one studies the effort that the agricultural colleges are making to extend their usefulness and hence their influence beyond the college walls, he will discover two rather distinct motives underlying it. Not only is the mode of attacking the problem and the type of organization influenced by this difference in motive but the temperament and training of the man best fitted to conduct successfully the work is different.

In the one type of effort, the motive is to train people, principally the younger generation, to a higher state of efficiency in their chosen pursuit. In this type of effort may be included for the most part short courses, movable schools, farmers' weeks, correspondence courses, at least in so far as they have a pedagogical basis and bias.

The other type of effort deals with the mature and busy farmer. It has no thought of training or educating him, properly speaking, but has to do with giving him information, without regard to his intelligence or previous training, for immediate application to his business in order that the farming of the State may be improved and the citizens of the State benefited. This type of effort is about equally efficient with the educated successful farmer, the cultured land-owning college president, or the unlettered track hand who calls bacteria "mackrowbees" and asks the horticulturist for a method of treating San "Josie" scale. Whatever form this type of effort takes, its effectiveness lies in the personal individual contact between server and served.

The relationship is not that of teacher and pupil, but of lawyer and client or of physician and patient. The extension man has received a retainer, although at public instead of private expense, and is expected to give sound advice. If he goes to court, he is expected to win his suit. In no case may he assume to know more than his client on other matters than those on which he may rightfully claim to be an expert; least of all may he patronize his client.

Otherwise he may be like the incident of the New York broker and a young man who brought some pure-bred cattle from a western State to the broker's New Jersey estate. Since the young man had been following these cattle a third of the way across the continent it is probable that his negligee costume was not noted for its freshness. At any rate the broker looked the young man over, and, taking him for a backward, untutored farm hand, concluded it would be great fun to show him the great commercial center of the continent. He asked the young man if he would like to be shown around; the young man thought he would. So the broker showed the young man the town, introducing him to his cronies as his friend from Missouri, taking him to the swell restaurant and other attractions of that metropolitan and cosmopolitan place. The broker enjoyed his joke for two days, and so did the young man, who understood perfectly the broker's attitude of mind. At the end of that time the personality of the young man had worked in on the broker sufficiently for him to make some inquiry concerning his antecedents. The broker learned that the young man was a junior in the university of the State from which he hailed. " Well," said the broker, " for the past two days I thought I was making a —— fool of you, but you have been making a —— fool of me." After that the young man was brought up out of the servants' quarters and treated as a guest.

CONCRETE EXAMPLES.

We are indebted to Ohio for a concrete example of these two forms of extension effort. That State has two extension departments, the one connected with the college of agriculture of the Ohio State University; the other is in the Ohio Agricultural Experiment Station. The first is in charge of a man brought from the public schools of Ohio, because of his interest in introducing agriculture into the public schools. The man in charge of the extension department of the experiment station was brought from the farm because of his interest in introducing upon the farms of the State better farm practices. The first man knows little of farming; the other man is without experience in or knowledge of methods of teaching.

The motive in the one case is to train for greater general efficiency, and the method is pedagogical. The motive in the other case is commercial. The method consists in bringing to the attention of the land owner the results of investigation in such concrete and convincing fashion that he will be led to put them into practice.

The first form of effort is a recognition that the teaching of agriculture which has finally won recognition after a half century of effort in the college and university does not solve the whole problem of agricultural education. It is the groping after an effective method of giving instruction in agriculture to those who can not avail themselves of a college education.

The second form of effort is a recognition of the inadequacy of that part of the Hatch Act which reads: " That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same and as far as the means of the station will permit." It is an attempt to find some more effective means of bringing the work of research to the door of the man on the land.

PRACTICAL VALUE OF THE INFORMATION GIVEN.

Permit me to give two or three concrete examples of what I mean. It is believed that the experiments conducted by the Cornell, Rhode Island, and Pennsylvania stations demonstrate that if the eastern farmer were to top dress his timothy meadows with 25 pounds each of available nitrogen, phosphoric acid, and potash, not only would his hay crop be approximately doubled, but the crop-producing power of his soil would be greatly increased. At present prices of fertilizers and farm crops in Pennsylvania this simple application of less than one-fifth of an ounce of crude material to the square foot would not only result in substantial profit to the farmer, but would increase the annual wealth of the State some fifty million dollars in hay alone. The game of the extension man is to bring about this result.

For twenty-nine years the Pennsylvania Station has been conducting a set of rotation fertilizer experiments. These results, reenforced as they are by the

Ohio and other stations, enable us to advise farmers with regard to a rational and profitable system of crop rotation and fertilization. No sane man doubts or can doubt the teachings of these experiments, even after the most casual inspection of the plats during the growing season. Yet we have had so little influence in all these years upon our neighbors that we have been accused of subsidizing the farmer on an adjoining farm in order to be able to point to him as a horrible example. By applying the teachings of these experiments we grow from 3 to 5 tons of hay per acre; our neighbor on the adjoining farm, with exactly the same soil type, raises half a ton. How is the experiment station to reach that man?

Two years ago the station leased a part of the farm under discussion, and last year had a certain 20-acre field in wheat. A farmer who lives beyond this land told me recently that he had been going by that field for thirty-four years, and in that time he had seen just two good crops of wheat there. One of them was grown by the station by applying commercial fertilizers as shown to be desirable for this soil type by the station's long-time fertilizer experiments. How can the station convince both the landlord and the tenant that an expenditure of $6 per acre for commercial fertilizers may be wisely made under existing conditions? These are illustrations of the problems that the station wishes to solve through its extension department.

These two forms of extension work came about very naturally in Ohio, owing to the fact that both the Ohio State University, located at Columbus, and the Ohio Agricultural Experiment Station, located at Wooster, each desired to carry on extension work, and yet each properly desired to live in peace and harmony with the other. Each has been, therefore, scrupulously careful to develop only those lines of extension work which it believed to be so germane to its work that no one could possibly question it.

DISTINCTION BETWEEN AGRICULTURAL EDUCATION AND EXTENSION.

The attention of everyone interested in the development of extension work in this country is called to the signboard at railway crossings, which in this case may be changed from "Look and listen" to "Read and ponder." In the institution with which the writer is connected two departments have grown up, one known as the department of agricultural extension and the other known, for the want of a better term, as the department of agricultural education. I say these two departments have grown up, because that is literally correct. This division is not the result of any philosophy or predetermined system of organization, but, like Topsy and college catalogues, "it just growed." The department of agricultural education conducts the correspondence courses of the institution, and is trying to bring about the introduction of instruction for, in, and by agriculture in the public schools. The department of agricultural extension is striving to make the potential force of the experiment stations kinetic.

EXTENSION TO BRIDGE A GAP.

It may not be out of place here to emphasize what everyone must recognize, that the extension department represents an attempt upon the part of college and station to bridge a gap. This bridge need not necessarily be looked upon as a permanent feature of our educational policy. May we not look forward to the day, perhaps far distant, when the gap will be filled and a solid educational roadbed constructed, so that the bridge may be removed? Correspondence courses, short courses of instruction for either young or old, are merely a confession that our public-school system has not been adequately organized.

Instead of looking toward a permanent American system of agricultural extension, would it not be serving mankind better if we would push forward the reorganization of the public-school system to a point where the outside pedagogical effort on which the agricultural colleges are now properly placing so much emphasis will be no longer needed?

IMPARTING KNOWLEDGE OF STATION WORK.

The other aspect of extension work, viz, transmitting to the people the latest results of station work, seems to me to be on a somewhat more permanent basis, since it is hoped new discoveries will be made constantly. An educated fruit grower may desire to have expert advice concerning the latest experiments on the use of lime-sulphur. The market gardener may be thoroughly up to date and yet need the advice of the plant pathologist. A thoroughly successful farmer may wish advice concerning the best cropping system for his soil type in the light of the best experimental evidence. As the experiment stations become better qualified to give sound advice, as will certainly happen as time goes on, it will be the more intelligent and successful farmer who will most frequently seek its counsel. As, however, the clientele of the station becomes more accustomed to depending upon the printed page for its source of information the Hatch Act, which provides that bulletins be sent free to every citizen of the State requesting the same, will be found more nearly adequate to meet the situation. In other words, the ultimate aim of land-grant colleges must be higher education and profound research, while the extension work is a more or less passing, although at present a very necessary, phase of their work.

ORGANIZATION AND EMPLOYMENT OF EXTENSION FORCE.

If one examines the extension work of the several institutions even in the most casual way he will find that two rather well-marked policies prevail. One policy is to organize a department with a head surrounded by a group of young men, usually quite recent graduates, to which no term applies quite so well as the term "youngsters." These youngsters—I mean no disrespect to them, for I have an abiding faith in the potentiality of the educated enthusiastic young man—are necessarily without wide observation and experience and often, perhaps usually, without a truly intimate knowledge of the business of farmers, because, even though raised upon a farm, the son generally has little knowledge of the financial aspects of farming, because his father, like other business men, is apt to be secretive about money matters. In some instances the head of the department has not been far removed from his undergraduate days.

The custom has been to use these young men to correct correspondence papers, to conduct so-called demonstration experiments, to take exhibits of station and college work to fairs, and to carry on that class of extension effort which, for lack of a better name, may be called survey work, where they go about with a list of questions which they seek to get the farmer to answer. These young men are also used in giving lectures at movable schools, at farmers' institutes, and similar gatherings.

In one institution at least young men have been employed and placed in charge of resident classes, while the older and more experienced men were sent to do the outside work. The danger here is that the resident students may feel as did a rather mature student in another institution. He was discussing the work of the institution with great earnestness. "I tell you what's the matter," he said, "what we have here is instruction by kids."

Another policy which prevails in some institutions is to employ only a very limited number of men in the extension work and only the most mature, experienced, and able that time and money can find. When this policy prevails it is recognized that the main factor in the success of an extension department is not the form of organization, but it is the human element. Without the right man or set of men the extension department can have little influence, especially when it attempts to deal directly with the man on the land and his particular and personal problems.

EXPERIENCE ESSENTIAL IN AN EXTENSION WORKER.

Successful farming requires profound insight and sound judgment. A man that does not possess these qualifications can not safely be allowed to represent the institution where an improved and financially successful farm practice is to be advocated. There is no place where chickens will come home to roost with more certainty than in this kind of work.

That is why gray hairs are needed. Few men under 40 are competent to farm—at least, in eastern United States—much less to counsel others.

Successful farming is a life work. Improved farming in a community or even on an individual farm can not be brought about in a day.

A year and a half ago a letter was received from a division superintendent of the Pennsylvania Railroad stating that the local branch did not pay, that the way to make it pay was to have more freight to haul, and the way to have more freight to haul was to have the farmers raise more crops, and that the way for the farmer to raise more crops was for the agricultural station to tell them how. He said further that the general superintendent of the railroad had instructed him to get in touch with the college and that he would be pleased to have a conference. One stormy day in February three officials of the railroad paid the college a visit, were shown about, and, I trust, duly impressed, as is usually the case with successful business men to whom the whole problem of an improved agriculture is a sealed book. In the conference which followed the superintendent referred to what he had seen, and said that it did no good to show such things to him, that he did not know anything about it and did not care anything about it. What he wanted to know was how that information could be got to the farmers along the line of his railroad. He then made the novel suggestion that they send the station agents of this particular branch of their road to the college to be shown what he had been shown, and thus they would become missionaries and centers of infection among the farmers with whom the railroad came in contact. This having been agreed upon, he inquired about the best time to send the agents. We told him that perhaps the first week in June would be a good time, since our field work would be in good form to impress the desired lessons. "Oh," he replied in disgust, "we want to send them next week." This was a railroad man's idea of moving things. You have all been impressed, no doubt, with the attitude of mind of the successful man of business when he first comes to take a glance at the problem of farm improvement.

We allowed the superintendent to send his agents at the time desired, but we laid before him some graphic charts showing the results of our fertilizer tests covering a quarter of a century and explained to him that there was nothing whatever in this movement for the Pennsylvania Railroad Company unless they could see ahead ten years; that it took four to six years to complete a rotation of crops, and that the full financial returns from any system of cropping and fertilization could not be obtained until the second rotation, which would not be completed short of eight to twelve years.

Facts like these explain why farming is a conservative business. It seems to me that we must grasp some of these fundamental conceptions concerning farming before we really appreciate the type of man who is fitted to do extension work. The extension man should not be by temperament and training essentially a promoter, but a safe and sane counselor.

PREPARATION FOR LEADERSHIP.

The ideal preparation for an extension leader would be seven years of college training, four years undergraduate and three years graduate work and fifteen years of farm experience. Since a young man usually enters college at 18 years of age, this means that he would be prepared for extension leadership at about 40 years of age. It may be accepted as a matter of course that no one is consciously going to make this preparation. Few who have made such preparation would be fitted for such leadership. Of these few who have had fifteen years of successful farm experience and are otherwise fitted for this service, only a small fraction would feel called upon to accept such position should opportunity offer.

While this is all true, it seems to me that it is not too much to insist that these are real essential qualifications for a high-grade extension leader, and not to insist upon them would argue a lack of appreciation for the profound possibilities and responsibilities that lie therein. Neither is it more in the way of training than the leading colleges and universities exact of professors in other departments. A professor of chemistry, methematics, botany, or language in our institutions of learning of the better class will usually have received his doctorate and have taught anywhere from ten to fifteen years before being made head of the department.

The most important attribute of an extension worker is leadership. One man may make certain statements and people fail to read them, or if they do notice them call them platitudes. Let the same ideas be expressed by another in perhaps somewhat more picturesque fashion and the whole civilized world is roused and action follows.

It is, of course, essential that the man on the land should believe in the extension worker. There is no class of people so prone to do their own thinking as the farmer. Whatever else you may say concerning their mental attributes, you know it to be literally true that as a class farmers think for themselves. In fact, this attribute is sometimes carried to such an extreme that one is disposed, at times, to get out of patience with them, but after all it is a mighty good failing.

PROMPTING TO ACTION.

It is not enough, however, that the man on the land should both believe the extension man and believe in him, but he should be willing to follow where he leads. It is not only necessary that the farmer should believe that it would pay to apply $5 worth of fertilizers for a given crop, or pay $10 a bushel for a given strain of seed, or $200 for a pure-bred bull, or that it is wise to spray potatoes or apples a given number of times, but it is necessary that he be willing to do it because the extension man advises it. Believing in a certain proceeding and doing it are two quite different things.

Until the man on the land acts, all your research and all your teaching have come to naught. Men follow leaders; less so on the farm than elsewhere. There is no leadership more difficult; none more important.

In a much-read recent novel, 13-year old Anne of Green Gables tells Marilla that she believes Mrs. Allen, the young minister's wife, would be a Christian even if she could get to heaven without it. I recently had a letter from an elderly professor of botany, in which he sadly remarks that "the man who studies botany because he can't help it is rare indeed."

CONCLUSION.

The conclusion of this paper would seem to be that we must look for our extension leaders from among those men who do not give their service because of the reward but because they can not help it. There are, and there must, in the very nature of the case, continue to be a few men who are by natural ability and training fitted for this type of leadership. When an institution has such an officer it should hold on to him at whatever cost.

LIST OF PUBLICATIONS OF THE OFFICE OF EXPERIMENT STATIONS ON FARMERS' INSTITUTES—Continued.

Annual Report of Farmers' Institutes. By John Hamilton. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1904. Pp. 58.

Farmers' Institutes in the United States. By John Hamilton. Doc. No. 711. Pp. 20. A pamphlet prepared for distribution at the Louisiana Purchase Exposition.

Farmers' Institutes in the United States. By John Hamilton. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1905. Pp. 55.

Farmers' Institutes in the United States. By John Hamilton. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1906. Pp. 56.

Farmers' Institutes in the United States. By John Hamilton. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1907. Pp. 47.

Farmers' Institutes in the United States. By John Hamilton. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1908. Pp. 46.

Farmers' Institutes in the United States. By John Hamilton. Reprint from Annual Report of the Office of Experiment Stations for the year ended June 30, 1909. Pp. 33.

LECTURES.

Farmers' Institute Lecture No. 1. Syllabus of Illustrated Lecture on the Care of Milk, accompanied with 44 lantern slides. By R. A. Pearson. Pp. 12. 1904.

Farmers' Institute Lecture No. 2. Syllabus of Illustrated Lecture on Potato Diseases and their Treatment, accompanied with 47 lantern slides. By F. C. Stewart and H. J. Eustace. Pp. 30. 1904.

Farmers' Institute Lecture No. 3. Syllabus of Illustrated Lecture on Acid Soils, accompanied with 53 lantern slides. By H. J. Wheeler. Pp. 28. 1904.

Farmers' Institute Lecture No. 4. Syllabus of Illustrated Lecture on Profitable Cattle Feeding, accompanied with 45 lantern slides. By F. B. Mumford. Pp. 21. 1905.

Farmers' Institute Lecture No. 5. Syllabus of Illustrated Lecture on Silage and Silo Construction for the South, accompanied with 50 lantern slides. By A. M. Soule. Pp. 31. 1905.

Farmers' Institute Lecture No. 6. Syllabus of Illustrated Lecture on Essentials of Successful Field Experimentation, accompanied with 32 lantern slides. By C. E. Thorne. Pp. 24. 1905.

Farmers' Institute Lecture No. 7. Syllabus of Illustrated Lecture on Roads and Road Building, accompanied with 41 lantern slides. By the Office of Public Roads of the U. S. Department of Agriculture. Pp. 15. 1907.

Farmers' Institute Lecture No. 8. Syllabus of Illustrated Lecture on Farm Architecture, accompanied with 48 lantern slides. By Miss Elmina T. Wilson, New York, N. Y. Pp. 19. 1907.

Farmers' Institute Lecture No. 9. Syllabus of Illustrated Lecture on Tobacco Growing, accompanied with 46 lantern slides. By J. N. Harper, Clemson College, S. C. Pp. 15. 1907.

Farmers' Institute Lecture No. 10. Syllabus of Illustrated Lecture on the Production and Marketing of Eggs and Fowls, accompanied with 44 lantern slides. By James Dryden, Corvallis, Oreg. Pp. 20. 1909.

Farmers' Institute Lecture No. 11. Syllabus of Illustrated Lecture on Wheat Culture, accompanied with 45 lantern slides. By J. I. Schulte. Pp. 22. 1910.